The New England
Journal of Medicine

VOLUME 204 JUNE 18, 1931 NUMBER 25

NEW ENGLAND SURGICAL SOCIETY

A METHOD OF TWO STAGE ABDOMINOSACRAL REMOVAL OF CANCER OF THE RECTUM*

BY FRANK H. LAHEY, M.D.†

WE wish to present to you a brief description of the plan of two stage removal of cancer of the rectum which we have devised, used, and recently published elsewhere[1]. Its advantages, at least as they appear to us, are such that we wish to present it to you with the possibility that it may prove useful and perhaps life-saving in certain of your cases.

The plan of procedure is well illustrated by the diagrams which we will show you on the

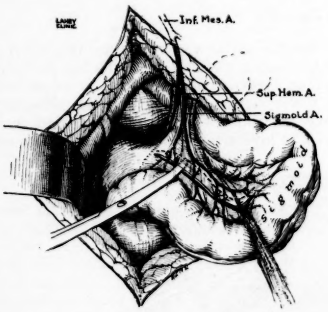

ILLUSTRATION NUMBER I.

screen. (Illustrations I to VI.) It consists first of an incision from the umbilicus to the pubis. Next the feasibility of the application of the two-stage abdominosacral removal to the lesion is settled after the carcinoma has been visualized, and the abdominal cavity palpated for metastases as related to the mesenteric lymph glands, peritoneal plaques and metastases in the liver.

Having determined the operability of the lesion by the two-stage abdominosacral plan, the sigmoid is delivered upon the abdominal wall and by pulling up a point is selected in the lower segment, which will comfortably rest above the level of the skin with the lower segment of sigmoid implanted in the wound just above the pubis. At this point the vessels in the sigmoid mesentery are ligated, as shown in Illustration I, from the portion of the mesentery next to the bowel down to but not including the superior hemorrhoidal artery opposite the level of the promontory of the sacrum. When the parietal peritoneum has been cut on either side of the mesenteric leaves and all of the vessels of the mesentery, except the supra hemorrhoidal, have been ligated, a counter incision is made to the left of the abdominal incision, as is shown in Illustration II, opposite the anterior superior spine. This incision is to serve as the point in which the permanent colostomy is to be established. Through this incision an Ochsner clamp is passed, as shown in Illustration II, grasping the sigmoid at the point where its mesentery has been cut and ligated. Another Ochsner clamp now grasps the sigmoid just below the first one, but through the median abdominal incision. (Illustration II.) With a cautery, taking care not to contaminate the wound, the bowel is cut across and the clamp passed through the proposed colostomy incision is withdrawn, pulling with it the upper segment of colon. One now has the colon divided, its mesentery ligated down to the superior hemorrhoidal vessels and the upper segment of colon pulled through a counter incision which is to be the point of implantation of the colostomy. With the median incision exposed, the two leaves of parietal peritoneum of the cut mesentery of the sigmoid are now sutured carefully together with fine zero catgut, starting the suture close to the point where the mesentery approaches the intestinal border of the lower segment. This running suture closes the two leaves of parietal peritoneum from the lower margin of mesentery down to its root and up the margin of mesentery of the upper segment of bowel. (Illustration III.) This peritonealization is completed in order to prevent adhesions of small intestine to the cut root of the mesentery between the first and second operative stages. The mesentery of the upper segment of colon, that is, the portion which is to be implanted in the colostomy, is then sutured to the left parietal peritoneum to obliterate the aperture through which loops of small intestine

*Read before the New England Surgical Society at New England Deaconess Hospital, Boston, Massachusetts, on September 25, 1930.

†Lahey—Surgeon, New England Baptist Hospital and the New England Deaconess Hospital. For record and address of author see "This Week's Issue", page 1327.

may pass and become strangulated. (Illustration III.)

The skin of the proposed colostomy incision is sutured closely about the implanted segment, has been sutured over the roots of the mesentery, and the mesentery of the upper segment of bowel has been sutured to the parietal peritoneum in the left iliac fossa.

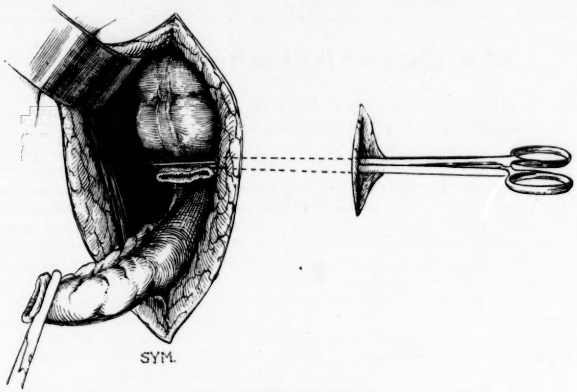

ILLUSTRATION NUMBER II.

the Ochsner clamp being left closed upon the blind end of proximal colon.

Care is taken not to insert any sutures between the parietal peritoneum, fascia and skin and the bowel itself in the colostomy because of the danger of penetration of the bowel, leakage and infection of the wound or peritoneal cavity by soiling from the feces-contaminated upper segment.

At this stage of the procedure one then has the colostomy established in the upper segment of colon, but the end of bowel clamped by the original Ochsner clamp, the visceral peritoneum

Attention is now directed to the lower segment of colon, the end of which has been closed with an Ochsner clamp. This is implanted in the lower segment of the median incision just above the pubic bone and the median incision closed in layers. (Illustration IV.) The clamp is left intact on the lower segment, where it will remain until it sloughs off on the fourth, fifth or sixth day.

The clamp is left on the colostomy segment of upper colon which is implanted in the left counter incision from which it will slough in four, five or six days. (Illustration IV.)

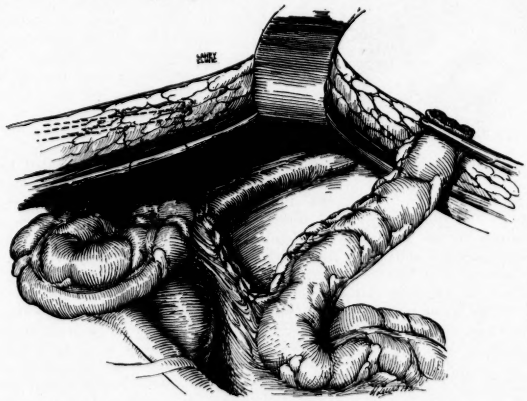

ILLUSTRATION NUMBER III.

In the implantation of this upper segment of bowel which is to serve as a permanent colostomy, a considerable segment of colon is pulled well above the skin level, amounting to an extent of three, four or five inches. It is desirable to pull out this amount of colon, as if there are any obstructive symptoms as the result of the clamp's being left on, a rubber-covered clamp may be applied proximal to the Ochsner clamp, the Ochsner clamp removed, the wound walled off carefully with gauze, and a large glass tube tied into the colon so that feces and gas may be expelled and distention relieved.

There is no disadvantage to pulling too much proximal colon out upon the abdominal wall, as

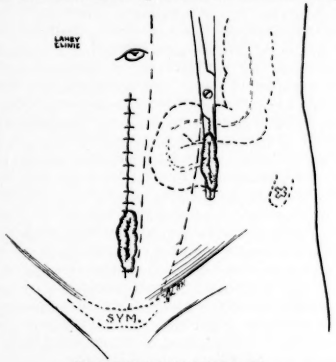

ILLUSTRATION NUMBER IV.

its removal with a cautery at a later date is entirely painless, and the redundant colon can be cut down until the excess upon the abdominal wall is just sufficient to fit comfortably within a colostomy bag. It is very much better to have a considerable amount of colon projecting, since it will comfortably fit into the bag, rather than to have it flush with the abdominal wall, since this predisposes to cicatricial closing and also does not permit the retaining of a colostomy bag directly over the implanted colon.

As soon as the clamp has sloughed off from the lower segment of colon implanted above the pubis, irrigations are immediately instituted, a rubber tube being inserted through the sphincter and the lower segment of colon washed out two to three times a day with water or salt solution. This is carried out for a period of ten days to two weeks until the lower segment of bowel has been thoroughly cleansed. Two to three days before the second stage of the removal of the carcinoma of the rectum is undertaken, if one desires, either mercurochrome or S. T. 37 may be irrigated through the wound to at least partially sterilize the inner portion of the implanted rectal canal.

At the end of ten days to two weeks, the second stage of the operation is undertaken. By this time the colostomy is well established, the bowels are moving well by the colostomy, the lower segment of implanted rectum, the upper end of which emerges just above the pubis, has been irrigated until it is thoroughly clean, inflammatory reaction about the tumor has diminished, and the patient has been improved as to his general condition by elimination through the established colostomy, by forced fluids and by a nutritious diet.

At the second stage procedure, the established left-sided colostomy is carefully covered with a cocoon in order that soiling may not take place. The upper end of the implanted lower segment of colon emerging above the pubis is painted with iodine, the skin about the edge of implanted intestine is dissected, as shown in Illustration V,

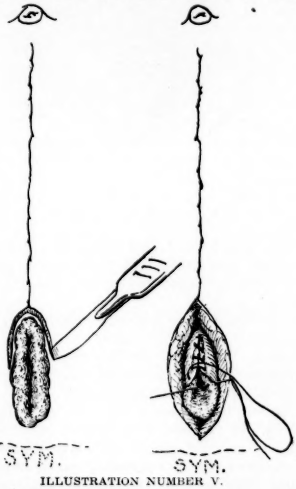

ILLUSTRATION NUMBER V.

similar to the closure of the anus in sacral removal or carcinoma of the rectum. The segment of bowel is sutured over and over with silk or chromic catgut so that the upper end of the lower implanted segment of colon is tightly closed. This is painted with iodine, the instruments used in the closure are discarded, the entire abdomen is prepared, and with clean instruments the original median incision from the umbilicus to the pubis is reopened.

The second stage removal is now begun by incising the mesentery peritoneum over the superior hemorrhoidal vein and artery. (Illustration VI.) These are ligated, parietal peritoneal incisions on either side of the mesentery are carried down beside the rectum, the rectum is dissected by means of the fingers from the hollow of the sacrum, the dissection being carried well down below the tip of the coccyx. The rectum is then separated in front from the bladder and prostate in the male and from the vagina and uterus in the female, and the lateral suspen-

sory ligaments are ligated. The rectum is pushed down into the hollow of the sacrum, and the parietal peritoneum sutured over it. In the female this sutured peritoneum is reinforced by the fundus of the uterus which is sutured back over the suture line in the pelvic parietal peritoneum as an additional protection against leakage.

We now, at this stage of the procedure, have the entire blood supply of the lower segment of colon and rectum ligated,—that is, the superior

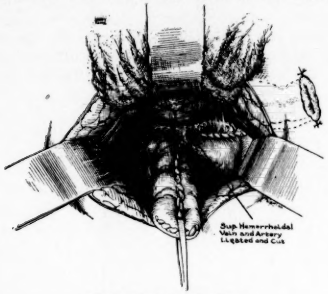

ILLUSTRATION NUMBER VI.

hemorrhoidal artery and vein, the rectum dissected free and pushed down into the hollow of the sacrum and the pelvic peritoneum closed above it.

The abdominal wall is now closed in layers, a small piece of rubber dam being left in the prevesical space to drain the point from which the implanted lower segment of rectum has been removed. With the abdominal wound closed, the patient is turned on his or her side. The buttocks are painted with iodine and the anus dissected free and closed with a continuous silk suture as for sacral removal of carcinoma of the rectum. The incision is then continued up over the coccyx, the coccyx is removed and the finger inserted into the cavity of the hollow of the sacrum which has been dissected free from above. With one finger in this cavity, the levator attachments to either side of the rectum are cut away, the dissection in the female between the anterior wall of the rectum and the posterior wall of the vagina carried out, and in the male between the anterior wall of the rectum and the prostate and posterior wall of the bladder dissected free. The levators are separated throughout their attachment to the rectum, the upper segment of rectum which has been implanted in the hollow of the sacrum is pulled down, and the entire segment freed from its pelvic attachment and removed. A large gauze pack is then inserted in the space left by the removal of the rectum. The skin and muscles are sutured and the operation is then completed.

We were impelled to divide this operative procedure, as we have, because we realized from our experience that there were a great many patients in whom the one-stage combined abdominosacral removal of cancer of the rectum could not be accomplished, and we wished to do the second stage removal only after the satisfactory establishment of a good working colostomy. We were further anxious to attempt to devise a plan whereby the second stage removal of the malignant rectum was undertaken on a segment of bowel which was relatively clean. Another point which we desired was that the first stage of the abdominosacral operation be made as short and as relatively slight as possible, and that the second stage be the longer of the two stages, since it could be accomplished in a patient whose colostomy was well established and whose condition following its establishment had been improved to the maximum extent.

The advantages, then, of this procedure are: (1) that it establishes as a preliminary measure an end colostomy; (2) that it segregates the lower segment of colon and rectum which is to be removed; (3) that the lower segment of segregated colon and rectum can be irrigated and cleansed of its feces-contaminated contents, and also the inflammatory reaction about the malignant area lessened; (4) that through the preserved inferior mesenteric vessels the viability of the lower segment remains intact, one may wait as long as seems desirable between the first and second stages, since the nourishment of the lower segment will be maintained through this vessel and necrosis will not result; (5) that the first stage of the abdominosacral procedure is of relatively slight magnitude, since it does not involve the dissection of the pelvis which is not only traumatizing, but which leaves a large undrained area of raw surface with resulting accumulation of serum and absorption of toxic material; (6) that the major portion of the operation is in the second stage, and in it there is complete abdominosacral removal of the bowel and its contained carcinoma as well; (7) that at the time the pelvic dissection is made and the colon removed, good posterior drainage is established from behind.

It is not to be assumed that we advocate this method of removal of cancer of the rectum in all cases. Complete abdominosacral removal of cancer of the rectum either by one or two stages is an operation of marked magnitude, and to endure it patients must be good risks and in reasonably good condition. Many obese and aged patients must be operated by preliminary loop colostomy and posterior resection of the carcinoma. We, therefore, do not wish it to be assumed that in describing this method we advocate it in all cases of cancer of the rectum. It is described as a modification of the original Miles procedure for two-stage abdominosacral removal of cancer of the rectum. In our hands, now in seven cases, it has proved very satisfactory, and we describe it to you merely as an additional procedure to be available in properly selected patients with cancer of the rectum.

REFERENCES

1 Surgery, Gynecology and Obstetrics, November, 1930. Volume LI, 692-699. Title: "Two-Stage Abdominoperineal Removal of Cancer of the Rectum."

RECENT TRENDS IN ANESTHESIA*

BY SIDNEY CUSHING WIGGIN, M.D.†

THE science of anesthesia has made rapid advances in recent years, due to the interest taken in this department of medicine by the medical world, especially the surgeons and anesthetists. More medical men are entering the field of anesthesia as specialists every year. Today every large city has its group of physicians, who give their entire time to its interests. It is now believed that every well-organized modern hospital should have a department of anesthesia, with a physician at its head who is a competent anesthetist.

The leaders of medicine and surgery today realize the seriousness of carrying a living being to that level of insensibility which, in many respects, simulates death, and also recognize that the anesthesia is, in most instances, as important as the operation. They are demanding the services of a trained anesthetist to assume this responsibility. No longer are they willing to have their patients merely rendered insensible to pain by means of ether in order that the surgeon may operate with confidence and freedom. They insist upon having the anesthetist choose the method best suited to the individual surgical case, and administer the anesthetic or combination of anesthetics, thus preventing accidents of anesthesia and rendering the patient's recovery and convalescence as uneventful as possible.

Among the more important developments in anesthesia are the use of such combinations as the gases—nitrous-oxide, ethylene, oxygen and carbon-dioxide—and ether; the employment of novocaine in spinal and regional anesthesia; and the introduction of new drugs, as the barbiturates, sodium amytal and nembutal, and avertin or tribromethanol. Better care is being given the patient before, during, and following the anesthetic state. This includes more attention to preliminary details, as the patient's general condition, psychological management, preliminary medication and diet; and, of great importance, the choice of anesthetics and the perfection of the technique in their administration.

The preliminary preparation of the patient is of great importance in inducing and maintaining anesthesia and the final outcome of the operation, as it makes all the difference between a quiet, normal sleep and a prolonged struggle. In the administration of the inhalation anesthetics, struggling, mucus, cyanosis, vomiting and postoperative complications are reduced to a minimum, and the horrors of the anesthetic state are eliminated. Induction becomes smooth and rapid. In inhalation anesthesia the margin between complete anesthesia and respiratory failure is lengthened; the amount of anesthetics used is markedly reduced. Crile, in his research work on surgical shock, has found that by proper psychological preparation and medication, the patient is relieved of emotions which, during the state of physical inactivity, often amount to proportions of psychic shock and which, superimposed upon the anesthetic and surgical shock, are liable to produce serious results.

The orders left at the hospital for preliminary preparation of the patient for anesthesia and operation may well be:

First: Explain to the patient on arrival at the hospital that he will be prepared with medicine so that he will have a good night's sleep, will be drowsy or sleeping in the morning, will be able to converse with the doctors just before the operation, but will drop off to sleep without any knowledge of ether or spinal anesthesia and awake after all is over just as peacefully. Also, explain to the ether patient that he will just fall asleep with gas-oxygen anesthesia and will not have to breathe in any special way. (One of the greatest worries of the patient is how he is to breathe.) This order is for the benefit of the nurses in order that they will be able to tell the patient something to encourage him.

Second: Light supper the night before the operation.

Third: Luminal, gr. 1 or 2; repeat in four hours if patient is not sleeping; or allonal, 2-3 tablets. This insures a good night's sleep before the operation, relieving the patient's mind of all apprehensions and relaxing the whole body.

Fourth: Fluids:

1. Ether or gas-oxygen cases: (a) force fluids, as orange juice, until midnight; (b) no fluids or ether—breakfast in the morning unless ordered.
2. Spinal anesthesia cases: may have small amounts of fluid to within two hours of operation.

Fifth: Preliminary medication:

1. Ether patients: morphia, gr. 1/8-1/4, or pantopon, gr. 1/3, with atropine, gr. 1/150-1/100, to be given one hour before operation.
   Children under 6 years receive no morphia, but are given atropine in doses gr. 1/300-gr. 1/400.
2. Spinal anesthesia or gas-oxygen cases: morphia, gr. 1/8-1/6, or pantopon, gr. 1/3, with scopolamine, gr. 1/300-1/200.
   Give two hours before operation, and repeat the same dosage one hour before operation.
   Cover eyes with cotton adhesive blinder.
   Cotton plugs in ears.
   Keep room darkened and quiet.

*Read before the members of the Berkshire County Medical Society, House of Mercy Hospital, Pittsfield, Mass., March 4, 1931. Members of the Boston Anesthesia Service, Harvard Club, Boston, Mass., March 13, 1931.

†Wiggin—Instructor in Clinical Anesthesia, Harvard University Medical School. For record and address of author see "This Week's Issue", page 1327.

If possible place patient in anesthesia room on operating floor before starting medication.

2a. For spinal anesthesia cases, ephedrine sulphate, 50 mgm. is given subcutaneously 15 minutes before the novocaine is injected into the spinal canal. If the patient has a low blood pressure (below 100) or a marked hypertension, 100 mgm. is given.

2b. For gas-oxygen-ether or spinal cases, sodium amytal, gr. 9-gr. 12, is given by mouth two hours before operation and morphia gr. 1/6 subcutaneously one hour before operation.

2c. For avertin cases to be supplemented with nitrous-oxide-oxygen or ether, morphia, gr. 1/6, and atropine gr. 1/150, is given 1 hour before the avertin, except in children.

In making a choice, one must know the bad effects of the anesthetics as well as the benefits offered. Ether and chloroform, nitrous-oxide and ethylene-oxygen, avertin, the barbiturates, as nembutal and sodium amytal, spinal, regional or local anesthesia with novocaine, offer a wide variety of choice.

Ether is the most toxic of all anesthetics with the exception of chloroform. It depresses the kidney and liver functions, raises the blood sugar and may produce shock or acidosis. It causes postoperative nausea and vomiting and is an irritant to the respiratory tract. It is also a common cause of pulmonary complications, as well as a cardiac depressant. However, because of its simplicity in administration and its small margin of danger, it is the safest anesthetic in the hands of the physician who has not the time to devote to the study of anesthesia. Under such circumstances, ether still remains our foremost anesthetic in uncomplicated cases, because of its muscle relaxing qualities, but under proper conditions other types of anesthesia must be considered.

In the administration of ether, preliminary to its induction by nitrous oxide, it has been found that carbon dioxide and oxygen in a 5% to 95% mixture, respectively, or 100% oxygen administered by the closed method (carbon dioxide developed by the patient himself), stimulates the breathing and fills the system with oxygen, so that the patient drops off into a quiet sleep under nitrous oxide, as well as passing through the ether in like fashion. As soon as possible, usually after the fascia of a laparotomy wound has been sutured, the ether is removed and the carbon dioxide and oxygen mixture is once more instituted, oxygenating the system, stimulating respiration and literally washing the ether from the individual. Consciousness thus returns much more rapidly, obstruction to breathing is prevented, mucus, nausea, vomiting and postoperative complications are reduced to a minimum, in fact, in most cases are entirely eliminated. The patient, upon recovering consciousness, states that he has experienced no unpleasant sensation. Postoperative morphia may be given before the anesthetic is removed, to aid the patient in regaining consciousness uneventfully.

Crile, in his experiments on shock from anesthetics, tells us that in normal men inhalation anesthetics as chloroform and ether, more markedly than nitrous-oxide and ethylene-oxygen anesthesia, cause increased H-ion concentration of the blood, forming an acute blood acidosis during and about an hour after anesthesia. Protracted ether or chloroform anesthesia causes cytologic changes in the cells of the brain, the liver and the adrenals identical with those resulting from other causes of exhaustion. After 4-6 hours of continuous ether anesthesia, many animals die at once. Nitrous-oxide and oxygen anesthesia does not injure the brain but measurably protects it against shock; and, moreover, these gases possess some of the restorative powers of sleep. He finds that ether and chloroform actively contribute to shock. The ill effects are due to the chemical effect of the anesthetic on the brain cells.

Nitrous oxide and ethylene-oxygen anesthesia gives less muscular relaxation than ether or chloroform. Special training in their administration is absolutely required. The advantages far outnumber the disadvantages of their difficulties of administration. They are quick in action, are pleasant to take, and recovery is immediate. They produce very little nausea and are protective against shock. Crile has proved that these gases are almost a specific against shock, his theory being that they interfere with the use of oxygen by the brain cells, as a result of which the cells cannot expend their energy, and in consequence cannot accumulate acid by-products in response to the trauma of operation, acting as a local blocking of the nerves. With the use of these gases, the dangers of respiratory tract complications are minimized. The effect on the kidneys is negligible and recovery from anesthesia is immediate. Postoperative nausea and vomiting are practically eliminated.

In the cases in which complete anesthesia cannot be secured with nitrous-oxide or ethylene, as in improperly or non-medicated patients, sufficient ether will give the desired relaxation. Carbon dioxide should always be used with these gases; it makes the administration of them smoother and safer and prevents the development of anoxemia.

For minor surgery and dentistry, nitrous-oxide and oxygen produces a pleasant analgesia in which pain is abolished while consciousness may be retained.

Ethylene, because of its inflammability when mixed with oxygen, is not used so much as it

might be otherwise. However, some men argue that it is not any more explosive than a room filled with ether vapor. It seems that, with proper wiring of the machine, table and patient to prevent the production of a spark in the presence of the ethylene and oxygen mixture, and by keeping the humidity above 56 by means of steam from radiator humidifiers or from the sterilizing rooms near the operating room, inflammability is done away with, thereby making ethylene a very serviceable form of anesthetic. Its toxic action is practically nil. More oxygen can be used with it than with nitrous oxide. An operation starting on a 20% oxygen-80% ethylene mixture, when half finished, will be carried through on 50% oxygen and 50% ethylene. There is no anoxemia, unless an asphyxial dose is given; 100% ethylene kills very rapidly, much more rapidly than 100% nitrous oxide. There is more relaxation with ethylene than with nitrous oxide, especially with a little ether added to it.

Spinal anesthesia with novocaine has no known toxic action, but because of the dangers of sudden death from errors of judgment and faulty technique, administration calls for special caution. In well selected cases, especially abdominal and joint surgery where complete relaxation is desired, it is an ideal anesthesia. Because of its non-toxic action on body tissues and its ability to produce a complete block anesthesia, it is the anesthesia of election in indicated cases of heart, lung, kidney, liver and diabetic complications of surgical conditions. The most reliable form of novocaine to use is the novocaine crystals. Spinal anesthesia gives the maximum of desirable operative conditions and the minimum of postoperative complications. For spinal anesthesia to be indicated, the patient must be in fair general physical condition and especially should not have a blood pressure below 90 systolic or any long-standing debilitating condition such as sepsis or profound shock, extensive hemorrhage, marked cachexia of chronic disease, or extreme weakness of old age. Spinal anesthesia should be used with caution in a patient with hypertension of advanced arteriosclerotic origin, as such an individual cannot stand the depressions of circulation which may occur.

The secret of a well-run spinal anesthesia is proper preliminary preparation of the patient: reinforcement of body fluids, psychological management, and preliminary medical preparations, eliminating the psychic factor, gentle handling, and absolute quiet in the operating room. (1) The amount of novocaine crystals used, (2) the dilution with proper amount of spinal fluid, and (3) the proper pressure of injection are the deciding factors on which the height and duration of anesthesia depend. Five to ten degrees of Trendelenburg position are maintained throughout the operation and for two hours afterward to prevent cerebral anemia, which contributes toward the depression of circulation and respiration. 100% oxygen administered in the closed method prevents anoxemia and pulmonary complications by stimulating respiration.

In cases of patients in poor condition, extremely sick from shock, hemorrhage, sepsis or debilitated states, the anesthesia of election is a combination of medication and general anesthetics.

The patient should receive moderate doses of morphine-scopolamine in due season, followed at the time of operation by a low concentration of nitrous oxide-oxygen anesthesia. This produces little more than analgesia and psychic relaxation; as soon as the patient is asleep, the surgeon infiltrates the tissues locally, producing a local blocking of sensory impulses. If the patient, by chance, does not relax sufficiently a very little ether is added to the gas-oxygen mixture, giving sufficient anesthesia for any operation. Although the relaxation may not be perfect, the surgeon must be willing to sacrifice a little for the sake of the patient, which is possible with the most careful surgical technique. At the end of the operation with the use of carbon-dioxide and oxygen the patient can be rendered conscious in a very few minutes.

Sodium amytal (sodium iso-amy-ethyl barbiturate) is a barbituric acid preparation given in 15 grain doses intravenously or by mouth in 9-12 gr. doses. It is used principally as a basal anesthesia for the preparation of cases for spinal anesthesia, but may be used as a preparation for ether or gas-oyxgen anesthesia. It is best adapted for individuals whom the anesthetist considers too excitable to be prepared with morphine-scopolamine medication. It should not be used as a general anesthetic, because when it is increased to these limits, death has taken place in several instances. Morphia is administered preliminary to injection of the sodium amytal into the vein. A deep sleep is obtained in a very few minutes which lasts for 1-2 hours, with a milder hypnosis lasting 1-2 days. A hyperesthetic condition develops in some cases, which is not even wholly obliterated with the spinal anesthesia. Sodium amytal is indicated especially as a supplement to an anesthetic requiring some stimulation of the nervous system as a spinal anesthesia. As a result of prolonged hypnosis it is of value in cases requiring any manipulation after the operation is finished, as apparatus or cast work of orthopedic surgery. The patient may require considerable constant attention during convalescence for a period of 1-2 days. Due to the prolonged anesthetic state resulting from the use of sodium amytal and the development of depression of the circulation and respiration with resulting pulmonary edema in some cases, plus the excitement developing in some individuals on regaining consciousness, it has been found to be advisable to discontinue the intravenous administration and give it by mouth in 9-12 gr. doses two hours before operation as a

preliminary preparation for ether, gas-oxygen or spinal anesthesia. Morphia gr. 1/6-1/4 is given one hour before operation to insure better results.

Sodium amytal raises the blood sugar in diabetics, therefore its use is contraindicated in diabetic surgery. It is also contraindicated in serious hypertension and cachexia.

Nembutal—or sodium ethyl barbiturate—is similar in principle and action to sodium amytal; gr. 1½ nembutal equals gr. iii sodium amytal. Nembutal has less depressive action on the circulation and respiration and less excitement producing action than sodium amytal.

Avertin, or tribromethanol, is one of the most promising drugs of the newer anesthetics. It is used principally as a basal anesthetic. Avertin fluid is a concentrated solution of tribromethyl alcohol in amylene hydrate, 1 c.c. of which contains 1 gram of the drug. Its toxicity is less than that of either ether, chloroform or any other anesthetic. The dose for basal anesthesia is 100 mgm. for every kilogram or 2.2 pounds of body weight. In a few individuals this dosage produces complete surgical anesthesia, but in most cases it is necessary to supplement its use with small amounts of nitrous oxide or ether or local novocaine. The trend is toward using small doses. In the aged lower concentrations are used. Children are very tolerant to avertin so receive the same concentration as adults.

There is usually a 10-30 mm. of mercury fall in blood pressure; the pulse rate remains at normal level; the skin becomes flushed; cyanosis is rare. Following the administration the patient becomes more and more drowsy and in about 4-7 minutes falls into a deep sleep. In 15-20 minutes, anesthesia has reached the depth required for operation, lasting from one to six hours, depending on the individual and the dose. The anesthetic state is followed by a gradual awakening, usually in 2-3 hours. The patient has no recollection of what has taken place.

The disadvantages are: Wide variations in susceptibility. Withdrawal is impracticable and anesthesia cannot be lightened. There is danger of the avertin fluid being decomposed especially by heating the solution to over 104 degrees Fahrenheit when it decomposes into dibromacetaldehyde and hydrobromic acid, which are highly irritating to the bowel. This is avoided by testing with a solution of Congo Red, the color turning blue or violet if the solution of avertin has decomposed. If a decomposed solution is used there is a certainty of a serious ulceration of the bowel. There is danger of respiratory and circulatory depression. If this occurs caffeine and adrenalin intravenously are administered and a mixture of carbon dioxide and oxygen, 5% and 95% respectively, is given. Avertin is not needed for operations of short duration.

The contraindications are disease of the kidneys, liver or rectum, serious hypertension, cachexia, and shock. Its advantages are ease of induction (the patient has no excitement stage and goes to sleep and wakes up in his own bed), better relaxation than is possible with the lighter anesthetics, moderately prolonged postoperative sleep, and reduction of postanesthetic nausea and vomiting.

Avertin is indicated especially for nervous, excitable adults and children, as well as mental patients. Its greatest sphere of usefulness is in operations about the head and neck, where great care must be taken that the blood does not run down the trachea and cause asphyxia. In abdominal work fair relaxation is obtained with it. It offers excellent advantages in orthopedic operations, giving the necessary duration with a very little inhalation anesthesia and good relaxation. In obstetrics and gynecology it has a distinct value. Avertin can be used to advantage in non-surgical conditions in controlling convulsions and severe attacks of pain that cannot be relieved with morphia, as: strychnine poisoning, tetanus, epilepsy, renal colic and migraine. Throughout the induction and course of anesthesia the patient should be watched by an experienced anesthetist following the patient's general condition, and supplementing the avertin anesthesia with inhalation anesthetics when necessary. To prevent obstruction to breathing the jaw of the patient must be continuously held up by the anesthetist, unless an airway cannot be tolerated, which sometimes happens in these cases.

Chloroform in the East has been practically discarded since 1890. Its toxic action on the liver has been well established.

Ethylchloride, used as a general anesthetic principally in England, has never occupied any prominent position in the United States. It is used rarely in the induction of ether, but quite extensively as a local anesthetic.

Every well-equipped hospital should have a good supply of oxygen and carbon-dioxide on hand.

Oxygen is an indispensable gas in anesthesia. It has many uses, among which are: in the induction, maintenance and resuscitation from ether; combined with the gases, nitrous-oxide and ethylene, in percentages varying with the requirements of the individual patient; used alone or with carbon dioxide in spinal anesthesia, being given throughout the course of the anesthesia to prevent anoxemia and respiratory failure; in combination with the gases or ether during avertin anesthesia. Among its non-surgical uses are: in the treatment of pneumonia, 100% oxygen being administered by means of the nasal inhaler, on 15 minutes and off 5 minutes, or continuously. Oxygen should be started early in the disease instead of waiting until the patient is moribund. It is of great value in drug poisoning, as morphia and strychnine poisoning, also in the treatment of gas poisoning,

as carbon-monoxide. It relieves the distressing symptoms in cardiac decompensation and asthma. Its value in toxic conditions is yet to be realized.

Carbon dioxide, most economically and satisfactorily administered 100% instead of from tanks of combined carbon dioxide and oxygen, is as valuable in anesthesia as oxygen. It is used in the induction, maintenance and resuscitation from ether, principally for stimulation of respiration; for this reason it is only used when needed and not continuously as oxygen. In this same manner it is used with nitrous-oxide or ethylene, spinal and avertin anesthesia. The danger is in using too concentrated amounts of carbon dioxide or over too long a period, causing an excess of over breathing or asphyxia. It is believed to raise the blood pressure. For this reason it is administered with oxygen during spinal anesthesia, when it is indicated.

Carbon dioxide has proved of great value in the treatment of hiccups. It is administered with oxygen in 10% concentration until relief is obtained. By stimulating the respiration the spasm of the diaphragm is inhibited.

The more common surgical conditions will now be considered:

In head cases as fractured skulls, brain tumors and brain abscesses, preliminary medication is given with caution due to the added complications of intracranial pressure. The method of anesthesia is ether given by rectum, or by intrapharyngeal or intratracheal method, with the use of the Richardson vaporizer and air pressure exerted from the foot bellows, electrical machine or compressed air systems in some hospitals. By these methods the patient's respirations are aided, and the anesthetist is able to keep clear of the field of operation.

Avertin is now being used by the neurosurgeons with some success, due to its lasting qualities, especially used in combination with the local infiltration of novocaine.

In eye, ear, nose, throat and mouth cases, intrapharyngeal and intratracheal gas or ether methods are used. In these cases, avertin is being tried, with some success.

Thyroid surgery is best performed under gas-oxygen sequence, with the aid of the Gwathmey or Heidbrink apparatuses. Avertin, supplemented with nitrous oxide-oxygen, is indicated in the very toxic patients, with marked excitement.

Chest surgery, which at one time was done under local anesthesia or ether with fair results, is now more perfectly performed under gas-oxygen sequences. With the use of gas machines, positive pressure can be used to prevent the collapse of the lung in cases where the thoracic cavity has to be opened. In chest surgery such as pulmonary tuberculosis, empyema, foreign bodies in the chest, etc., the best anesthesia is gas and oxygen. It has been found that the best results are obtained by the same preliminary dose of morphia and scopolamine as is used for any gas-oxygen sequence case.

Abdominal cases probably call for more consideration than any other type of surgical cases. Where complete relaxation is desired, as in conditions in the upper abdomen about the diaphragm, and the patient's general condition is good, with or without pathological complications, spinal novocaine anesthesia is the first choice, ether being second. If the patient's condition is poor from hemorrhage, shock or prolonged sepsis of any serious debilitating condition, or marked vascular changes of arteriosclerosis, gas-oxygen with a little ether added if necessary, and local novocaine infiltration is the anesthesia of election. In low abdominal work, where relaxation is of a little less importance, as in pelvic work, the first choice is spinal anesthesia, with a minimum dose of novocaine, a well run gas-oxygen with or without a little ether being the second choice, if indicated. Avertin may be used in indicated cases in all abdominal work.

In prostatic surgery, the first stage can be done under local anesthesia or a light gas-oxygen or a low spinal anesthesia. The second stage requires deeper relaxation, so should be done under spinal anesthesia as first choice, gas-oxygen (with a little ether if needed) as second, and ether as third choice.

Rectal surgery requires deep relaxation for manipulation of the sphincters, so spinal with its completely relaxing qualities is the anesthetic of choice. The ideal anesthesia for hemorrhoidectomy is gas-oxygen with a very little ether. In minor conditions as abscesses requiring incision and drainage, a light gas-oxygen is advised. Ether may be used, but it is not needed unless spinal is contraindicated. Avertin is contraindicated in diseases of the rectum.

Surgery of the lower extremities may be performed with spinal anesthesia, using a small dose of novocaine for operations lasting less than an hour, or gas-oxygen-ether as second choice. Minor surgical conditions of all the extremities, not requiring much relaxation, such as tumors, osteomyelitis, and open reductions can best be done under gas-oxygen with a little ether if necessary. Regional anesthesia with novocaine is of great value in complicated conditions where spinal anesthesia and general anesthesia are contraindicated.

In gynecological work the most common operation is the double operation. For the dilatation and curettage and the repair work below a gas-oxygen is sufficient in most cases, after the anesthetic state has been induced with gas-oxygen-ether. When it is time to operate through the abdomen enough ether is turned on to relax the abdominal muscles and make it pos-

sible for the surgeon to explore the abdominal cavity. Spinal anesthesia works very well in these cases, but is not necessary as the required complete relaxation of the upper abdominal conditions is not present. Avertin supplemented with nitrous-oxide and oxygen or ether may be used.

In uncomplicated obstetrical cases requiring instrumental delivery, the patient is kept under a nitrous oxide-oxygen analgesic stage until full dilatation of the cervix, when enough ether is added to produce a complete anesthesia. As soon as the baby is born the ether is turned off and the patient is carried on nitrous oxide-oxygen until the placenta is delivered or until any laceration is sutured. By this time, with the aid of carbon-dioxide and oxygen, the patient is rendered conscious. At this time morphia is administered and the patient falls into a quiet sleep. Atropine gr. 1/150 is the only preliminary drug necessary in these cases.

In deliveries and Caesarean sections complicated by respiratory tract, cardiac or kidney conditions, spinal anesthesia with not more than 100 mgm. of novocaine is indicated. Avertin may be used to great advantage in these conditions.

In all obstetrical cases to be done under spinal anesthesia, pantopon 1/3 gr. and scopolamine 1/200 gr. should be administered. The premedication relieves the tremendous psychic factor present in the majority of these cases and does not interfere with the baby in experienced hands. Resuscitation of the baby is just as frequently necessary in the non-medicated cases as in the premedicated cases, especially Caesareans, where the baby does not get the pressure exerted on the chest wall as it does when it comes through the birth canal, thereby expressing the secretions from the deeper portions of the respiratory tract.

In conclusion, it might be stated that an ideal anesthesia has not yet been found. The general trend is in the direction of a good anesthesia which will produce unconsciousness and give the necessary relaxation without any anesthetic or operative complications, whether it is in normal individuals or cases complicated with acute infections, cardiovascular, pulmonary, renal or liver conditions, as well as the so-called bad risk cases. The tendency is to attempt to get away from inhalation anesthetics and approach a more direct method.

A well run ether however should still be considered foremost in choice when it is indicated. Gas-oxygen, if well administered, is the best method of anesthesia where it is indicated. Spinal anesthesia should only be used in selected cases. Sodium amytal and avertin should be looked upon as preliminary drugs to extend the field of usefulness of the inhalation anesthetics.

RESPIRATORY COMPLICATIONS IN RELATION TO THE ADMINISTRATION OF ANESTHETICS*

BY FREEMAN ALLEN, M.D.†

AT the Massachusetts General Hospital, as well as in other Surgical Clinics, there has always been the problem of respiratory complications—principally pneumonia and bronchitis—occurring in connection with anesthesia, and for a long time investigators have been trying to determine the cause of these complications and, by the introduction of new anesthetic agents and methods, to prevent them, without, however, any conspicuous success because they seem to occur, at any rate in major surgery, quite as frequently after local and spinal anesthesia, after gas oxygen and ethylene anesthesia, as after ether.

In this paper I shall try first to present a series of statistics—not my own—showing the incidence of these complications in relation to age, sex, season of year, methods of administration of the different anesthetic agents, preoperative condition of patient, etc., and shall then give my own ideas on the cause of their incidence, and how to prevent them.

Hewitt, the well-known English anesthetist, in his book quotes the following statistics:

In 2400 administrations of gas and ether, he had 10 cases of respiratory complications, 9 of which were in abdominal cases as follows:

6 bronchitis
2 bronchopneumonia
1 bronchitis and pleurisy
1 bronchitis, bronchopneumonia, and pleurisy

At the same time, 600 chloroform administrations showed not a single respiratory complication. He does not analyze these cases to the extent of determining how many of them came to operation, with existing respiratory disease.

At the Montreal General Hospital, 2500 administrations of gas and ether showed 55 cases of respiratory complications, or 2.2%; 35 of these cases occurred in the 5 "winter" months, and 20 in the 7 "summer" months.

These 55 cases were:

14 lobar pneumonia
16 bronchopneumonia
19 bronchitis
6 pleurisy

*This paper was written, by Dr. Allen, to be read at a meeting of The Bigelow Club, at his house on April 7, 1930.

The meeting was postponed, owing to the illness, which resulted in Dr. Allen's death on May 3, 1930, but the paper has recently been read by Dr. Donald King, at a meeting of The Bigelow Club, held at the house of Dr. Lincoln Davis on March 3, 1931; and also, by Mrs. Allen, before The Boston Society of Anaesthetists, at a meeting at Dr. Allen's home, on April 8, 1931.

†Allen—For record and address of author see "This Week's Issue", page 1327.

It is not stated how many were abdominal, nor how many came to operation with existing respiratory complications.

The lobar pneumonia was usually right-sided, which seems to point to the invasion of the right lung by septic material from mouth and pharynx.

From a Baltimore gynaecological clinic are reported 9000 cases of ether or gas ether administrations with 47 respiratory complications, of which

30 were bronchitis, and
17 bronchopneumonia

This is a relatively small number of respiratory complications, but as we shall see later, women have markedly fewer respiratory complications than men.

Hewitt quotes from Graves' paper on the subject in 1910. Graves analyzed 2000 ether cases, of which 1089 were laparotomies; of these 1089 laparotomies, 20 developed respiratory complications as follows:

8 bronchopneumonia
9 bronchitis
3 pleurisy

Of the remaining 911 cases, not laparotomies, there was one bronchitis and one pleurisy. I will present Graves' cases in more detail later.

Hewitt quotes Pasteur's 3559 laparotomies in the Middlesex Hospital, London, 1906 to 1910, in which ether or gas ether was used. The patients were of both sexes, and all kinds of operations were performed. There were 198 respiratory complications, as follows:

88 pneumonias with 31 deaths
53 bronchitis with 4 deaths
26 dry pleurisy
12 massive collapse
7 pleural effusion
8 pulmonary infarct
2 gangrene of lung
1 empyema

The above statistics of Hewitt's do not go into detail, and they are obviously designed to give simply the incidence of respiratory complications. Presently we shall consider statistics that go into more detail and are, correspondingly, more enlightening.

Graves, in the *Boston Medical and Surgical Journal* in September 1910, analyzes 2000 cases of ether and gas ether administrations, of which 550 were laparotomies (65 breasts; the rest plastics), and 539 were laparotomies with vaginal operations, making 1089 laparotomies, of which (as stated before) 20 developed respiratory complications, as follows:

8 bronchopneumonia
3 pleurisy
9 bronchitis

In Graves' cases the administrations were of Mallinckrodt ether by students under supervision. There were

259 gas ethers by Bennett method (closed)
6 anesthol (ethyl chloride, chloroform and ether)
124 drop ether
1591 ether by cone

Graves compares three series of cases: from Massachusetts General Hospital in 1000 laparotomies, there were 22 cases of pulmonary complications

15 pneumonia
7 bronchitis
9 deaths

From the Carney Hospital, in 1000 laparotomies, there were 16 pulmonary complications

11 pneumonias
4 bronchitis
4 deaths

From the Free Hospital, in 1089 laparotomies, there were 20 respiratory complications

8 pneumonias
12 bronchitis
0 deaths

The higher mortality in the Massachusetts General Hospital cases is on account of the greater number of septic and desperate cases, and on account of patients being of both sexes.

Graves' conclusions:

1. Postoperative lung complications occur slightly more frequently and are more fatal in cases previously septic, or desperately sick, or in the aged and feeble.
2. Operative shock, method of administration, length of anesthesia, age of patient unless extreme, physical type of patient, bad behavior of patient under ether, wound sepsis, pulmonary embolism, do not seem to bear any constant relationship to the causation of postoperative pneumonia.
3. Postoperative pneumonia and bronchitis occur with great constancy during the cold weather months, and are rare during the summer months.
4. Preëxisting foci of infection in the lungs are almost invariably lighted up or aggravated by ether anesthesia.
5. Most of the cases of postoperative lung complications are caused by the lighting up or aggravation of preëxisting focal infection.
6. Many postoperative pneumonias could be avoided by a more careful and more expert preoperative examination of the respiratory tract.

Dr. Donald King has collected some very valuable and instructive figures regarding postanesthetic respiratory complications at the Massachusetts General Hospital. I will review briefly here the principal points and I hope he will go into more detail during the discussion.

In 1928, on all services, there was a total of 4286 operations, showing 106 pulmonary complications, 86 of which were pneumonia and collapse.

In 1929, on all services, there was a total of

4881 operations with 115 respiratory complications, 86 of which were pneumonia and collapse: exactly the same number two years in succession.

Pneumonia was considerably over twice as frequent in males as in females. Thus in 1928, 47 males had pneumonia against 22 females, and in 1929 53 males had pneumonia against 19 females.

There was no notable difference in the occurrence of pneumonia in the months of the year. In 1928, there were 12 cases of pneumonia and collapse in January, 12 in May, 11 in August, and 8 in December; in 1929, there were 8 in January, 9 in May, 8 in August, and 6 in December.

In 1928, 34 patients of the 4286 operated upon showed preoperative respiratory infection, mostly bronchitis or tonsillar infection. In 1929, 41 of the 4881 operated upon showed preoperative respiratory infection, mostly tonsillar or bronchial infection.

Of the 86 cases of pneumonia and collapse occurring in 1928 72 had ether, and of the 86 in 1929 53 had ether; the rest were given local or spinal anesthesia.

The length of operation seems to have considerable effect, most pneumonias occurring in operations of about 1½ hours' duration.

It was thought by some of the staff that the wards occupied by some of the patients might be infected and causing pneumonia, but this is not so because in 1928 in old Ward D 47 patients had pneumonia, and 49 had pneumonia in the new Ward D in 1929; and in the case of women, 14 had pneumonia in 1928 in old Ward C, and 18 had pneumonia in 1929 in new Ward C.

There is no question that upper abdominal operations show a greater incidence of pneumonia than lower abdominal. Operations on the stomach and gall-bladder head the list, of course, due to faulty expansion of the lung owing to the site of operation. Thus 7.7 per cent. of Kink's cases showing pneumonia and collapse were upper abdominal operations, and 1 to 2 per cent. in operations on the extremities, hernia, etc.

Dr. Sweet at the Massachusetts General Hospital has analyzed 338 cases of spinal anesthesia, all in major operations, and 33 of the cases, or 9.8 per cent., showed respiratory complications, as follows:

	Total	Dead
Pneumonia, alone or with peritonitis	18	11
Bronchitis	10	0
Massive collapse	2	0
Embolism	2	1
Laryngitis	1	0
	33	12

28% of the cases were gastric operations
7% gall-bladder

PRESBYTERIAN HOSPITAL

1925		Per cent.	1926		Per cent.
Pneumonias	27		Pneumonias	28	
Operations	1891	1.4	Operations	1979	1.4
Pneumonia following ether cases		2.0	Pneumonia following ether cases		1.6
Pneumonia following gas oxygen ethylene		1.1	Pneumonia following gas oxygen ethylene		1.5
Pneumonia following gas oxygen ether ethylene ether		1.4	Pneumonia following gas oxygen ether ethylene ether		1.5
Pneumonia following local		.5	Pneumonia following local		1.7
Pulmonary embolism occurred in 9 cases			Pulmonary embolism occurred in 6 cases		
Massive collapse occurred in 5 cases			Massive collapse occurred in 4 cases		

For many years, but especially lately, I have been observing the administration of anesthetics at the Surgical Clinic of the Massachusetts General Hospital with a view to determining, if possible, the cause of such a marked incidence of respiratory complications.

Let me remind you that for the past ten years anesthetics at the hospital have been administered by nurses. You may remember, perhaps, that in a paper I read to you some years ago, I pointed out that the reason for this change was to secure a certain amount of permanence in the anesthetizing staff at the hospital. You will remember that I said that just as soon as house officers began to be proficient in the administration of gas or ether, they were shipped to some other kind of work and very likely never gave another gas ether. The administration of anesthetics is a line of work in which experience counts more than in many other lines of work, and a relatively stupid individual *can*, by sticking to the job, become, through sheer force of experience, a fairly good anesthetist. It seems to be necessary to learn to interpret correctly the different sounds and inflection in the respiration of an anesthetized patient. Some nurses are good and are naturally inclined to give good ethers. Others show no aptitude for the work. It is purely a question of experience, and in many cases no amount of instruction seems to make any difference. Certain nurses simply do not know where their patients are at —whether they are deep or light; they seem unable to keep a patient on an even plane of anesthesia. They are letting them out at one time, and putting them too deep at another.

There must be some reason why we do not have more respiratory complications in private practice and why they have so many in hospital practice.

Of the utmost importance in safeguarding against pneumonia is the intelligent and efficient administration of preliminary hypodermic

medication—principally morphine and atropine, and sometimes scopolamine. The dosage of these drugs should vary with the body weight, habits, blood pressure, blood count, mentality, and general condition of the patient. To arbitrarily give morphine grs. 1/6 and atropine grs. 1/150 to every patient regardless of age, sex, and weight, is obviously absurd. This is not literally done at the Massachusetts General Hospital but very nearly so, and it is not at all uncommon to see a 200-lb. man whose preliminary medication reads "morphine grs 1/6 and atropine grs. 1/100", or a weak and anemic woman about to have a D. & C. and weighing, say 120 lbs., whose preliminary medication will be the same. Generally speaking, the man could safely and advantageously have been given 1/4, 1/3, or 1/2 gr. of morphine with 1/200 of atropine.

The purposes of the preliminary medication are some eight in number, but two of the principal ones are to lessen the amount of ether necessary to control the patient, and to dry up the secretion of mucus and saliva.

Some surgical clinics—notably the Lahey Clinic—are, to say the least, fearless in their use of preliminary medication. Probably made bold by the large amount of goitre surgery that they do, which requires heavier preliminary medication than other forms of surgery, it is not at all uncommon to see patients in the Lahey Clinic very profoundly narcotized, white, still, with slow respirations. Of course, such a patient requires a minimum of gas ether ethylene, or whatever agent is to be used. I do not advocate such a free use of narcotics as this; but, on the other hand, it is just as bad to be fearful about the administration of narcotics preliminary to anesthesia, and it is worse than futile to give inadequate doses. This is very often done at the Massachusetts General Hospital*.

Then there is the proper time for the administration of these doses. Often it is advantageous to give the medication in divided doses. The interval between the last preliminary medication and the starting of the anesthetic should be half an hour more or less. At the hospital, we often find the surgeon late, or for some other reason the starting of the anesthetic is postponed for one or two hours without any corresponding change in the preliminary hypodermic medication. For example, a patient may have received morphine grs. 1/6 and atropine grs. 1/150 at 8 A. M. for an operation scheduled for 8:30, but it may be 10 before the anesthetic is started. By this time, the effect of the preliminary medication has begun to wear off. Sometimes the medication is renewed or increased, and sometimes not. This irregularity in the time of administering the preliminary medication cannot be asserted to be a definite cause of postanesthetic respiratory complications. It is just one little circumstance which, with others, contributes to the occurrence of these complications.

A rapid and uninterrupted induction of anesthesia by gas, or whatever agent is used for induction, is of great importance as safeguarding against respiratory complications. A halting, timid, interrupted induction allows the development of salivation, mucus, lachrymation, all of which are preliminary to actual vomiting. This salivation and mucus once started is very difficult to eliminate. The mucus laden with ether vapor may be swallowed, causing gastritis with nausea and vomiting; or the mucus and saliva remaining in the mouth and pharynx may become infected with bacteria from foul teeth or infected tonsils and may be inhaled or aspirated into the bronchi or lungs.

A rapid, smooth induction does not give time for the development of mucus and saliva, and a patient correctly started will remain dry throughout the operation.

The head should invariably be turned on the side as soon as anesthesia is complete. In fact, before anesthesia is complete, the head should be held down on one side and the patient forced to relax in this position. This allows mucus and saliva to drain into the dependent cheek, and avoids inhalation or aspiration of same into the right lung.

Instead of a rapid, smooth induction being made, many anesthetists, being afraid of a little cyanosis, make a timid, halting induction and in an effort to clear up cyanosis, they allow their patient to come almost completely out, thus allowing the secretion of mucus and saliva. The administration of oxygen is not apparent at once in the patient's color; it takes time for the oxygen to get into the circulation. Therefore, in attempting to clear up cyanosis, we should permit two or three full inspirations of air, being certain that the airway is perfectly free, and then resume the administration. After a few seconds, the air or oxygen will show in the patient's color. It is not necessary or desirable to allow the patient to come out. This, however, is done persistently by inexperienced anesthetists, who also insist on etherizing patients with the head in the median line, thinking, because they are holding the jaw forward and because the patient's breathing is clear, that this is all that is necessary. As a matter of fact, holding the jaw forward with the head in the median line pulls the base of the tongue forward. This draws forward the epiglottis and, although it makes the airway patent, it favors the inhalation of any fluid that may be in the pharynx or nasopharynx.

Having completed a rapid, smooth induction, anesthesia will be complete and the patient must then be kept at a perfectly even and level plane of anesthesia suitable to the operation that

*The preliminary medication referred to as used at the Lahey Clinic was entirely before nitrous oxid anesthesia. At the present time (before ethylene anesthesia) the amount of preliminary medication is probably about a third of that referred to.

is being performed. An uneven or timid administration, allowing the patient to be light and straining one minute and deep and paralyzed the next, contributes in a marked degree to postanesthetic respiratory complications. This is also true if we attempt to deal with an anesthetic which in itself is inadequate to control a patient for certain operations. For example, more often than not it is quite impossible to control a patient undergoing cholecystectomy with gas oxygen or ethylene oxygen. These do not and cannot produce the relaxation requisite for this operation unless helped out by unduly heavy preliminary medication or by the local administration of novocain. What is required is deep ether or choloroform anesthesia or spinal anesthesia to produce adequate relaxation.

Most surgical cases, like laparotomies, require that the patient be kept constantly and evenly in the third stage of ether anesthesia, namely; regular stertorous respiration, corneal reflex absent, and relaxation complete. In this stage of surgical anesthesia, we can produce slow, quiet breathing, and a patient should show a respiratory rate of not over 30; whereas, if we were attempting to do the same operation with gas oxygen or ethylene oxygen, the respiratory rate would be 40 or 50. The patient would be hyperpneic and the intrapulmonary pressure much increased. Therefore, the second factor in eliminating postanesthetic respiratory complications is an even, smooth maintenance of anesthesia, with the head on the side.

It takes several years of constant work and experience really to know the condition of your patient, i.e., what depth of anesthesia you are working with.

Speaking generally and from the point of view of major surgery, patients should be kept relatively deeply under. Any letting up of the depth of anesthesia allows an increase in the rate and depth of the respiration because it allows the return of certain reflexes. This increased rate and depth of respiration tend to allow the inhalation of mucus and saliva.

The use of the airways I consider undesirable and a potential cause of postanesthetic respiratory complications. Respiration is not properly performed through the mouth, but through the nose, and although it may be preferable to introduce an oral airway in certain difficult patients, I think a nasal tube of proper calibre and length, carefully introduced, is preferable to an oral airway. I know that I have been criticized for my use of nasal tubes, but if one does not attempt to use too large a tube (too small a one is utterly useless) and has the end carefully beveled and thoroughly lubricated, no harm can result and a very satisfactory type of respiration can be produced.

An oral airway, compelling the patient to breath through the mouth during a long operation, and presenting to the upper respiratory passage a cold freezing ether vapor, cannot fail to do harm in many cases.

Some patients come to operation with acute intestinal obstruction and may be regurgitating brown faecaloid intestinal contents. These are very dangerous cases, as they are too weak to make any proper reflex vomiting and the contents of the stomach simply roll up into the larynx, drowning the patient.

The late Frank Harrington taught me to pass a stomach tube on these cases, and to leave the tube in the stomach throughout the operation. This is an absolute safeguard against inhalation of vomitus, and I have seen it save many a life.

In cases that are not actively regurgitating or vomiting, it may suffice to wash out the stomach once before operation and then remove the stomach tube. It is less distressing to the patient to do this under light ether anesthesia; after removal of the tube, the administration of ether is continued to the proper depth. If it is necessary, however, to leave the tube in place, this may be done without seriously interfering with a successful administration of the anesthetic.

The anesthetist should watch the progress of the operation to the extent of knowing how far along the surgeon is, and should so gauge the speed of his surgeon that by the time the peritoneal sutures are placed, the patient is well on the road to recovery. It is a mistake, as is so often seen, to have a patient breathing stertorously with dilated pupils when the wound is closed.

The protection of a patient against cold while on the operating-table is an important factor in preventing postanesthetic respiratory complications. I know of no private hospital at which the system of keeping the patient warm and protected against draughts is so efficient and thorough as at the Massachusetts General Hospital. Blankets are placed on the operating-table in such a manner as to be folded over the patient when he lies on them: one over the shoulders, protecting the back and front of chest, and one under and over the legs.

The patients at the Massachusetts General Hospital also are moved much more smoothly and efficiently than they are at some private hospitals. The reason is that more adequate assistance seems to be available at the Massachusetts General Hospital. To transfer a patient properly from truck to bed requires four people. If it is done by means of a draw sheet, there should be one person for each side of the sheet, one person to move the head, and one person to move the feet and legs. If the patient is to be lifted, three people may be enough: one to grasp the head and shoulders, one to grasp the pelvis and abdomen, and one to lift the thighs and legs.

It is distinctly undesirable, and I should think might easily produce sacro-iliac trouble or start up bleeding, to move patients as is so often done

with only three or even two persons to help. It results in the head and shoulders being pulled onto the bed first, and the feet and legs come trailing on later, causing, I should think in some cases, marked malposition of the sacro-iliac joints. The above remarks do not apply strictly to the prevention of postanesthetic respiratory complications although the efficient and gentle handling of a patient recovering from anesthesia *is* important in this connection.

It is the opinion of Dr. J. C. White of the Massachusetts General Hospital that the postanesthetic administration of carbon dioxide with a view to preventing postanesthetic respiratory complications is of no value. If it is to be of any value, it must be continued at intervals for two or three days after operation.

Conclusion: The cause of ether pneumonia seems to be the hypersecretion that ether causes being inhaled or aspirated into the lungs.

THROMBOPHLEBITIS IN VARICOSE VEINS

BY E. EVERETT O'NEIL, M.D.*

THE majority of contributors to the literature on varicose vein therapy have been emphatic in declaring that an existing thrombophlebitis is a definite contraindication to injection treatment. To quote a recent writer[1]: "It is universally agreed that it should not be done in the presence of any infectious thrombophlebitis, new or old." It is our belief, however, that this condition affords a particular indication for intravenous treatment, with results as striking as any found in other phases of the varicose vein problem.

The particular type of thrombophlebitis we would like to emphasize in this paper is that associated with varicose veins, and applies, therefore, only to the superficial venous system. The deep venous system is probably never varicosed, the phlebitis affecting it representing an infection of normal veins. Occasionally, also, normal superficial veins may become phlebitic as the result of extension from focal infection in teeth or tonsils.

The term "phlebitis" has in the past been very loosely used, and it is difficult to ascertain from the literature whether "phlebitis" applies to an involvement of the deep or of the superficial venous system. It is, however, quite important to make a differentiation, since much depends, from the point of view of treatment and prognosis, on appreciating where the difficulty lies.

It is obvious that injection therapy cannot be applied in conditions of deep thrombophlebitis, the so-called phlegmasia alba dolens or "milk leg", where absolute rest in the acute stage is imperative.

Thrombophlebitis in varicose veins may be classified as follows:

a) Acute
b) Chronic
c) Recurrent

Varices of either the short or the long saphenous system may be involved. These veins, usually the larger ones, convey a slow-running blood stream which in some instances is almost stagnant. The background, therefore, is favorable for the development of phlebitis caused by focal infection, trauma, or systemic disease.

It also is probable that a certain amount of low grade infection lies dormant within the vein walls and is exacerbated by these extrinsic causes. In this connection, we feel that the rôle of focal infection, as an etiological factor in varicose phlebitis, has not received the attention it merits. Various teeth, infected tonsils, disease foci in other organs contribute to the production of phlebitis in much the same manner as they have been credited with doing in other conditions. Again we have observed a much higher incidence of phlebitis in varicose veins during the late winter and early spring weeks than at any other season of the year. This seasonal relation, as a factor in "milk leg", or deep phlebitis, has been frequently commented on by obstetricians. Perhaps the most frequent cause underlying this type of phlebitis is infection following a break in the skin, resulting in the formation of an ulcer and later the production of a severe ascending phlebitis. Such a type with its dangerous and occasionally fatal sequelae is well illustrated by the following case:

CASE No. 1.

S. E. K. had marked varicosities of both legs for many years. They had never given him any trouble. About six months previous to the present illness a small ulcer formed just above the internal malleolus of the right leg, following a blow. The ulcer resisted treatment. October 1, 1929, the patient noticed a red tender line corresponding to the vein leading into the ulcer, and extending up the leg about three inches. He was put to bed with appropriate treatment consisting of ice and elevation. Two days later the phlebitis had extended to the knee. The patient suddenly developed a sharp pain in the chest and went into collapse. A diagnosis of pulmonary embolism was made. He was in extremis and a poor prognosis was given. He rallied, however, and subsequently recovered. One week later the phlebitis had extended up the thigh to the sapheno-femoral opening. At this time the patient suddenly complained of a sharp, lancinating pain in his abdomen and presented the picture of an acute surgical condition. A diagnosis of acute mesenteric thrombosis was made by a competent consultant. The patient was moribund and on account of his condition was not operated. Again he recovered. His phlebitis gradually subsided and he left his bed January 1, 1930, three months after his initial attack.

*O'Neil—Junior Visiting Surgeon, Boston City Hospital. For record and address of author see "This Week's Issue", page 1327.

This case is an extreme picture of an acute thrombophlebitis with an almost fatal ending. Had this patient had his veins cared for in the early stages of the phlebitis, before the infection had gained headway, we are confident that all the disagreeable and almost fatal complications would have been avoided. To complete the story of this patient, his veins subsequently canalized and he now presents himself again, veins distended, thickened, and leathery, a condition more difficult of treatment than before his phlebitis.

Contrast the above picture with that of Case No. 2.

CASE No. 2.

Dr. S. had had moderate-sized varices of the right leg for some years. They had never troubled her. One week before coming for treatment she struck the leg above the ankle on the corner of a table. Subsequently the leg became swollen and painful and an ascending phlebitis started up it. The patient was immediately put to bed with ice and elevation. At the end of a week the phlebitis had reached her knee with no improvement in comfort. She got out of bed, against the attending physician's advice, and hobbled into the office. On examination a definite phlebitis was noted extending from the right internal malleolus to the internal condyle of the knee. The area was extremely tender. The vein in the thigh was varicosed but apparently not yet involved in the infection. At once 2 c.c. of quinine-urethane were injected into a clear area of this vein, a firm pressure bandage was applied, and the patient instructed to go about her normal duties, which entailed considerable walking. Twenty-four hours later she had a marked chemical phlebitis extending from the injection point to the saphenous opening. Hot applications applied to the affected area relieved the pain. For the first few days after treatment she experienced considerable discomfort as the result of her activity, but gradually this distress subsided. The pain in her thigh, due to the chemical phlebitis, disappeared much more quickly than did that in her leg, which was the result of infection.

This patient, we feel, may well have escaped the almost disastrous complication that beset the patient in Case No. 1, due to a timely blocking off of the "clear space" above the infected segment of vein.

The patient cited in the following case represents a picture of recurrent phlebitis, i.e., a chronic phlebitis with an acute exacerbation, following focal infection.

CASE No. 3.

Mrs. C. had varicosities of the long saphenous system of the left leg, extending from ankle to groin, of many years' duration. Three years prior to the present attack she had an extensive phlebitis of these varices, which necessitated six weeks' confinement in bed. Her veins subsequently dilated and she was considering treatment, when she was taken ill with acute follicular tonsillitis. One week after the onset of this tonsillitis she was seen by the writer. At this time she complained of severe pain in the lower half of the leg. On examination a well defined phlebitis was found extending half way up the left leg. She was given 1 c.c. of quinine-urethane in the clear space in the vein, just below the internal condyle of the knee. Three days later 2 c.c. of quinine-urethane were injected into the varix in the lower third of the thigh, and three days later 2 c.c. more were injected about three inches below the sapheno-femoral opening. In the interim, with leg and thigh firmly bandaged, the patient was instructed to get about. After a few days of discomfort, both from phlebitis in her leg and venitis in her thigh, but more from the former, she returned to her work.

The above three cases, typical of the group under discussion, bring home clearly the further application of the injection treatment of varicose veins. They represent three out of thirty-two cases of varicose phlebitis which the writer has so treated, all with results as outstanding as those above cited. For some time past, in certain cases of acute phlebitis, a few surgeons have suggested ligation of the saphenous vein at its attachment to the femoral, with extirpation of the diseased portion below. We believe this to be a sound surgical procedure and have so practised it. But where injection therapy can be applied, it is our opinion that it should supersede operative measures.

The diagnosis of varicose phlebitis entails no difficulties. In the acute type, a sudden attack of pain in the affected vein, followed by redness and induration with swelling of the limb, a slight elevation of temperature and pulse, and intense discomfort with activity, comprise a definite entity. With appropriate treatment this first attack subsides, leaving the previously diseased veins worse than ever, for they become hard and knotty, with considerable perivascular induration. Elastic tissue in the vessel walls is replaced by scar tissue, the veins losing what little tonus they may have previously had. The vessels usually do not sclerose; the lumen is still present; the valves are disabled; the walls shrunken. We have, therefore, a hollow, non-elastic tube down which the blood pours as before, accounting for subsequent oedema, eczema, and ulceration. The affected vein may remain permanently as has been described, but what happens in the majority of cases is that eventually the varices again distend and to all appearances are the same as before they had become inflamed. Actually, from a therapeutic point of view, they are tough and leathery, harder to puncture and more difficult to sclerose.

Once a varix has been so involved, it is fair to assume that a certain amount of low grade infection persists in the vessel walls and also extravascularly, in the form of lymphangitis and cellulitis. We have seen a number of patients with reddened, indurated lower legs, with a previous history of acute varicose phlebitis, the infection never severe enough completely to disable them, and yet always present. Such a chronic phlebitis, which really is not an accurate description, since the infection involves lymphatics and cellular tissue as well, renders patients susceptible to further attacks of the disease, as was illustrated in Case No. 3. Hence

it is important that this type be recognized and treated early before another attack ensues.

The handling of varicose phlebitis does not differ materially from the usual vein injection treatment. Given a patient with beginning phlebitis, a point three or four inches above the infected area is selected and the initial dose of 1 c.c. of quinine-urethane given. It is essential that the injection be made in what I have termed the "clear space", an uninvolved segment above the area of infection. A firm compression bandage, preferably a "Klebro"* is tightly applied from foot to knee. This is left on for one week. Injections are made at three day intervals, until the saphenous vein up to the femoral opening has been thrombosed. The "Klebro" bandage is reapplied weekly until pain and swelling have disappeared from the leg. It is interesting to note, in this connection, that the pain and discomfort from the infectious phlebitis may persist for some weeks. The distress of chemical phlebitis, on the other hand, even though in an adjacent segment of the same vein, while quite severe, disappears completely after several days. The patient is advised to get about his duties and particularly to do a great amount of walking. Standing for any length of time is interdicted. Later, if necessary, massage may be given, after all pain has left the leg.

In a certain number of cases there is no "clear space" available for injection at the time when the patient is seen. In such an event it is advisable either to cut down upon the vein, in the lower third of the thigh, and inject the exposed vessel or, if the phlebitis has extended into the thigh, to cut down upon the saphenous vein close to its femoral attachment, ligate and divide it between chromic No. 1 catgut sutures, and inject the distal portion. This is done under local anesthesia with 1% novocain. By this means we are doubly sure of getting rid of the varicosed member, i.e., by ligature and injection. We have practised this method[2] and always recommend it in uncomplicated varices of the lower leg without apparent involvement of the thigh segment. This procedure can be readily done in one's office within a few minutes.

The results in these cases have been extremely gratifying. All patients, without exception, have been improved. The figures in this group compare favorably with those in a series of operative cases reported by Homans[3]. I have been unable to find any other data in the literature on the subject.

VARICOSE PHLEBITIS

	Number of patients operated	Cured	Improved
Homans	10	9	1
	Number of patients injected		
O'Neil	32	—	32

I have not listed any of the patients in my series as cured, feeling that at least a three-year period should ensue before we can reasonably put them into this class.

The prognosis in this group should be excellent, since, with the main venous channels put out of commission, new veins must form before phlebitis again occurs. It has its analogy in varicose ulcers. If the veins leading to the latter are destroyed, the ulcers will readily heal and not recur, except in another area and if new varicosities form.

No accidents have happened in this series. Infection has not been spread. No emboli have occurred for embolism does not tend, as a rule, to occur in varicose phlebitis, although the patient cited in Case No. 1 presented a very definite clinical picture of it. It is, however, at least a potential danger. More important, as I see it, is the crippling of the patient, compelling confinement in bed for protracted periods of time, with the possibility of recurrence, sepsis, and ulceration. We feel, therefore, that we are suggesting a justifiable and safe method of handling this troublesome complication of varicose veins.

CONCLUSIONS

1. Injection treatment in varicose phlebitis is a sound, surgical procedure which can be carried out on ambulatory patients.

2. Thirty-two cases are cited in which such treatment has been employed with excellent results.

3. In cases of varicose phlebitis in which there are no veins apparent above the area of infection, excision of the saphenous vein in the thigh or ligation of the vein at the saphenofemoral junction and injection of the distal segment are advised.

4. The rôle of focal infection as an important etiological factor in the production of thrombophlebitis in varicose veins is emphasized.

*Klebro Bandage.

The Klebro bandage is obtainable at most surgical supply houses. It is an elastic type of bandage, covered with an adhesive substance which makes it cling tightly to the leg. It is firm enough to be compressive without being too bulky beneath a sheer stocking. It is most applicable in bandaging the thigh, where most bandages loosen and slip down.

REFERENCES

1 Pennoyer, Grant P.: The injection treatment of varicose veins. Ann. Surg. 91:416-421, March, 1930.
2 O'Neil, E. Everett: The injection treatment of varicose veins. New Eng. J. Med. 200:972-981, May 9, 1929.
3 Homans, John: Nelson loose leaf surgery, Vol. 3, Chap. 8.

MASSACHUSETTS TUBERCULOSIS LEAGUE

CERTAIN ASPECTS OF THE PROBLEM OF TUBERCULOSIS IN THE COMMONWEALTH OF MASSACHUSETTS*

BY FREDERICK T. LORD, M.D.†

WE have met to celebrate the seventeenth year of the League's activities in the Prevention and Control of Tuberculosis. Let me express for the League our appreciation of the cordial invitation to hold this meeting in Worcester.

The personnel of the League Staff remains the same and its work efficient and satisfactory. Reports will be made by the Executive Secretary and the Educational Secretary of the activities in their respective fields.

There are certain aspects of the tuberculosis problem in the State to which I should like to call your attention.

TUBERCULOSIS MORTALITY RATES

The mortality rate continues to decline in most civilized countries and is especially encouraging in the Commonwealth of Massachusetts. During 1930, the number of reported cases and the deaths were as follows:

	Number of Cases	Number of Deaths
Pulmonary Tuberculosis	4706	2423
Other forms of Tuberculosis	587	311
Hilum Tuberculosis	562	0

This gives a death rate from pulmonary tuberculosis of 56.9 and of other forms of tuberculosis of 7.3, a total death rate of 64.2 from tuberculosis. It is significant that this is the lowest rate ever recorded in Massachusetts.

It is important to appreciate, however, that in spite of the steadily declining mortality in civilized countries, tuberculosis is still the chief cause of death during the most active and useful period of life from about 15 to 40 years of age, and that there must, in consequence, be no relaxation of our efforts to control the disease. There is also a significant difference between the sexes in the number of deaths from tuberculosis. The death rate for girls is almost twice as high as for boys between 15 and 19 years of age. Such considerations justify the slogan of the present year: "Tuberculosis—The Foe of Youth."

MORBIDITY RATES IN CHILDREN

In the attempts to control tuberculosis, there has rightly been an increasing emphasis on the importance of the discovery and control of the disease among children, and it is this aspect of the problem to which I wish especially to call your attention. The childhood type of the disease may be regarded as the forerunner of the adult type of tuberculosis. We are especially fortunate in this State to have data available, through the agency of the Chadwick Clinics, regarding the incidence of tuberculosis among school children. I am indebted to Dr. Alton S. Pope, Director, Division of Tuberculosis, Department of Public Health for the following figures. The Chadwick Clinics are in charge of Dr. Arthur Paul Wakefield. The x-ray interpretations were made by Dr. Roy Morgan.

During the school year, 1929-1930, 49,340 children in 11 cities and towns were examined by the Chadwick Clinics. Of these, 42,022 were in the Grade and 7,318 in the High Schools. The number examined represents 56% of the school population in the 11 communities.

INCIDENCE OF INFECTION AMONG CHILDREN

The first 100,000 grade school children tested for infection by the tuberculin test showed 28% of reactors. Of the 42,022 more recently tested, 20% reacted. In the high school group infection is, as might be expected, more prevalent. Of the 7,318 high school students, 39% reacted.

INCIDENCE OF DISEASE AMONG CHILDREN

Tuberculosis of the childhood type was demonstrated in 2497 (2.5%) of 100,000 grade school children examined during the first five years of the Chadwick Clinics. Suspicious cases numbered 5369 and tuberculosis of the adult type was found in 98.

Of the 42,022 grade school children more recently examined 400 (0.9%) had the childhood type of the disease and 1060 (2.5%) were classed as suspects. Thirteen (3/100 of 1%) were found to have pulmonary tuberculosis. The incidence of tuberculosis in the more recent group is thus considerably less than during the first five years of the investigation.

Of 7318 high school children evidence of pulmonary tuberculosis was demonstrated in 13 (about 2/10 of 1%). This type of the disease is thus more than six times as common in the high schools as in the grade schools. In addition, twice as many suspected pulmonary cases were found in the high schools.

CONTROL OF TUBERCULOSIS IN CHILDREN

It is highly desirable that the utmost advantage be taken at once of the information available through the activities of the Chadwick Clinics. Opposition by parents and children in the investigation in grade and high schools must

*The President's Address delivered at the Annual Meeting of the Massachusetts Tuberculosis League in Worcester, April 13, 1931.

†Lord—Clinical Professor of Medicine, Harvard University Medical School. For record and address of author see "This Week's Issue", page 1327.

be ascribed to failure to appreciate the far-reaching immediate importance of the information obtained. The discovery of the childhood and the pulmonary type of tuberculosis may be life-saving to the affected individual and of great moment in preventing the spread of the disease in the community.

Following the discovery of tuberculosis in a child by the State Department of Health, responsibility for further action rests with the Local Boards of Health and the family physicians. Other members of the child's family should be investigated, contact with open cases broken and provision made for an arrest of the disease in the child.

REMEDIAL MEASURES

Our knowledge of the outlook in the different types of childhood tuberculosis is limited and valuable information is to be expected from the follow up of cases in the Chadwick Clinics. Meanwhile, a reaction to tuberculin without x-ray or other evidence of disease may be regarded as of little moment, and no special precautions need be taken in this group.

Children with inextensive childhood types of the disease and otherwise normal may be expected to do well under satisfactory home conditions, limited physical activity, rest periods, extra feeding, fresh air, sunlight and the elimination of further infection. For this group also much may be done by enrollment in special privilege classes, open air and open window schools, summer camps and preventorium care.

Attention of the affiliated organizations has already been called by a special committee of the League to the selection of candidates for the summer camps. In view of the special importance of tuberculosis to the individual and the community, it seems desirable to give preference in the summer camps to those with an inactive and inextensive childhood type of the disease, suspicious cases, contacts reacting to tuberculin and reactors with malnutrition. These suggestions are not intended, however, to lead to the exclusion of other meritorious candidates for admission.

A larger provision of special privilege classes in the schools seems desirable. At present there are in the State only 2 preventoria and many more should be available.

The prognosis with active or extensive childhood types of tuberculosis and the adult pulmonary type in children is much more serious and sanatorium care or its equivalent should be provided for this group, if progress of the lesions is to be prevented.

The number of beds available in the State for the care of tuberculous children seems at present adequate, but the situation is far less satisfactory with respect to adults.

In estimating the adequacy of sanatoria provision, it is customary to compare the number of beds with the number of deaths from tuberculosis. One bed to each annual death is regarded as a minimum standard. In 1928 only 5 states in the Union met this minimum requirement. At present the Commonwealth of Massachusetts has 1.6 beds for every death and with the completion of the Middlesex Sanatorium this will be increased to 1.7. It is at present impossible to get patients admitted without a long period on the waiting lists and it is obvious that more sanatorium beds should be provided.

ANNUAL REPORT OF EXECUTIVE SECRETARY*

BY FRANK KIERNAN†

THE year that comes to a close with this Annual Meeting has been a notable one for the League. In Miss Latimer's address appears an account of the substantial growth in our Health Education Service. May I emphasize the value we place on the development of courses for teachers and public health nurses in both the Eastern and Western parts of the State. The Executive Committee has become so convinced of the importance of this, that in the 1931 Budget the sum of $600 was appropriated for these courses. I will speak of our progress under the following headings: Finances, Seal Sale, Field Service and Allied Activities:

*April 13, 1931.

†Kiernan—For record and address of author see "This Week's Issue", page 1327.

FINANCES

The final results of the 1929 Seal Sale were $262,154.00 or approximately $4,000 advance over the previous year. The Board of Directors at its meeting on February 6, 1930, adopted a budget of $25,635 for the year's work. I am pleased to report that the business of the League was carried on well within the amount appropriated.

The report of the Treasurer and the Auditor's report covering our entire financial operations for the fiscal year of 1930 will be presented later this morning at the Corporation Meeting.

SEAL SALE

From the official reports so far received from Affiliated Organizations and from the estimates given us by the organizations which have not as yet completed their accounting it is possible to

say that the 1930 Seal Sale will reach $260,000. In view of the general financial condition last year this is an achievement of great importance and the Affiliated Organizations of the League are to be congratulated on this success in the face of very difficult circumstances.

In anticipation of the 1930 Seal Sale your Secretary arranged with the National Tuberculosis Association for the services of Mrs. A. E. Sinks, National Seal Sale Consultant. Mrs. Sinks spent the fifteen days between October 14 and October 30 in Massachusetts assisting the League and the Affiliated Organizations in planning for the sale. She visited Boston, Brockton, Whitman, Essex County, Lawrence, Norfolk County, Plymouth County, Northern Worcester County, Southern Worcester County, Southern Middlesex Health Association, Franklin County, Hampshire County and Berkshire County. At these meetings a detailed description of Seal Sale procedure was given, a review of the experience of the previous year, advice on peculiar local problems and in some places readjustment of the Seal Sale set-up. A special meeting to discuss problems in the area of Metropolitan Boston was also held with eleven local Secretaries participating. Your Executive Secretary presided at this latter meeting and also spoke at a number of those enumerated above.

In connection with the Seal Sale, mention should be made of the events of November 25 at Northampton. By arrangements made through our Hampshire County Tuberculosis Association, your Secretary with Mr. and Mrs. Calvin Coolidge enacted a Seal Sale opening event at the Coolidge home which was recorded for the movie-tone news reels of Paramount, Pathé, Hearst, Radio Keith and Fox Films. The talking pictures of this event were shown in motion picture theatres throughout the United States for a week beginning Thanksgiving Day. We are advised that this feature was retained for a period of two weeks following Thanksgiving in the News-Reel Theatre in Times Square, New York. Following the picture-taking at the Coolidge home your Secretary on the same day spoke before the Kiwanis Club, Women's Club and the Rotary Club in Northampton and in the evening went to Holyoke for a Seal Sale Conference.

In connection with the last Seal Sale and at the suggestion of Mrs. Sinks there was introduced for the first time a contribution slip inserted in the Seal Sale letters by which individuals might contribute an additional amount over and above the money sent in payment for the Seals. Several associations used these slips and secured substantial amounts thereby. The question has been raised as to whether percentage on such contributions is payable for national and state work and I take this occasion when we are all here to quote the sections of the National Contract bearing on this point. The contract reads:

> "All Christmas Seals furnished by the National Association shall be sold at a uniform price of one cent each . . . the Agent agrees to pay to the National Association a sum equal to 5% of the gross receipts. . . . It is also understood and agreed that the proceeds realized from all subscriptions and donations to tuberculosis work procured at the time, or as the result of the Seal Sale, shall be accounted for as part of the gross receipts of the sale of Christmas Seals. . . ."

These terms are binding on all the forty-eight States in the Union and the States in turn are obligated to include these provisions in their contracts with their Affiliated Organizations.

FIELD SERVICE

At the request of our Affiliated Organizations your Secretary spoke at the following meetings during the year: Parent-Teacher Association in Newburyport, Kiwanis and Rotary Clubs in Chelsea, Lowell Tuberculosis Council, Beverly Health Centre, Southeastern District Health Officers' Meeting at Lakeville, Rotary Club at Natick, Essex County Health Association at Middleton, Norfolk County Health Association at South Braintree, Malden Health Camp Anniversary at Malden, Kiwanis Club at Framingham and meeting of Lynn physicians at Essex County Sanatorium.

Your Secretary was also invited to speak at the Annual Meeting of the Arkansas Tuberculosis Association at Little Rock, the New Hampshire Tuberculosis Association at Manchester, the Michigan Tuberculosis Association in Lansing and the Rhode Island Tuberculosis Association at Providence. The paper given at Lansing was reprinted in the *New England Journal of Medicine** and copies have been widely asked for by tuberculosis associations, libraries and individuals in many parts of the United States.

Your Secretary arranged with Dr. Walter P. Bowers, Editor of the *New England Journal of Medicine*, for the publication of the papers on tuberculosis given at the State Department of Public Health meetings at North Reading on June 16 and at Lakeville on July 1. Subsequently reprints of the addresses of Doctors Frederick T. Lord, Henry D. Chadwick, Edward O. Otis and Kendall Emerson made at these meetings were made for the League and widely distributed. Your Secretary also arranged for the publication of Tuberculosis Abtracts furnished by the National Tuberculosis Association to appear each month in the *New England Journal of Medicine*.

Your Secretary in conformity with the action

*N. Eng. J. Med., 204:116, 1931.

of the Board of Directors on February 9, communicated with the appropriate Committees of the Legislature recording the League's approval of House Bills 80 and 81 relative to pasteurization of milk, No. 83 relative to cure and prevention of rheumatism, No. 265 relative to compulsory vaccination in private schools, No. 476 authorizing County Sanatoria to furnish extramural diagnostic service on application of Boards of Health and No. 907 relative to provision by cities and towns for the care of children at preventoria.

Your Secretary appeared before the Committees on Public Welfare and State Administration of the General Court favoring House Bill 907 and opposing House Bills 781 and 914 which, if enacted into law, would license magnetic healers and chiropractors to practise the healing art. A letter has been received from the State Medical Society thanking me for my part in opposing these Bills.

Your Secretary in the course of the year was in contact with all the Affiliated Organizations of the League either by actually going to their offices or conferring with their officials and Executive Secretaries. Advice and assistance on programs of work, budgets, by-laws and administration were given.

Assistance was also rendered to the Affiliated Organizations in securing workers for summer health camps and a new Secretary was secured for Essex County Health Association to succeed Miss Cora L. Cooke, who resigned.

The publication of the *Health Journal* was continued with approximately 3,600 copies of each issue sent to those on our mailing list including the other tuberculosis associations throughout the United States.

The 1931 Early Diagnosis Campaign especially devoted to the prevention of tuberculosis in young men and young women is now under way. Twelve affiliated organizations of the League have purchased campaign supplies totaling $650 and the League itself has purchased $250 worth of additional supplies from the National Association.

Through the medium of motion pictures, billboard posters, the radio, bulletin board posters and a hundred thousand pieces of literature, the serious problem of tuberculosis in adolescence is being brought before the people in a dramatic way beginning this month. Your Secretary has assisted in making the plans for this campaign and is stimulating the use of the campaign material. We are informed that the campaign for 1932 will emphasize the fact that all new cases come from contact and that the origins of cases should be sought out. These campaigns are nation-wide and Surgeon General Cumming a few nights ago spoke on a national hook-up in connection with this year's campaign. Today at our annual luncheon meeting we are to have the pleasure of hearing an address by Dr. Iago Galdston, Chairman of the National Committee on Health Education and a leading spirit in the annual Early Diagnosis Campaign.

Following the return of your Secretary from the National Tuberculosis Association Meeting I called a meeting of the Executive Secretaries of the Affiliated Organizations in the Eastern and Western Sections of the State. At these meetings I gave an account of the significant developments in our work as learned at the National Meeting. In inviting the Secretaries to these meetings I asked them to come prepared with suggestions as to how the League might better serve Affiliated Organizations. As a result of these meetings we secured a number of valuable suggestions for our work. One of these was a study of the problem of selecting children for summer health camps. This matter was subsequently also suggested by our President, Dr. Lord. After a discussion of the matter by the Executive Committee of the League a special committee was appointed which went into the subject thoroughly and with the assistance of Dr. Henry D. Chadwick a plan for the selection of children was drawn up, printed and copies distributed throughout the State. We are informed that a number of the Affiliated Organizations are using this plan in selecting the children for the 1931 camps. During the year the League distributed without cost to physicians, health officers and Senior students at Harvard, Tufts and Boston University Medical Schools 1,000 copies of the pamphlet "Childhood Type of Tuberculosis" by Drs. Chadwick and McPhedran.

A Series of four 3-day Institutes for Public Health Nurses was held at Northampton, Worcester, Boston and New Bedford from March 9 to 19. There was a total registration of 436 public health nurses. The Institutes which were organized by your Secretary were held under the joint auspices of the League, the State Department of Public Health, and the Massachusetts Society for Social Hygiene. The lectures on tuberculosis were given by Mrs. Violet H. Hodgson, R.N., Assistant Director of the National Organization for Public Health Nursing. Your Secretary presided at sessions of the Institute in all the four cities. We have received many enthusiastic letters and messages of thanks for having provided this service for the nurses.

ALLIED ACTIVITIES

At the request of the State Tuberculosis Associations in Missouri, Indiana and Tennessee where these associations are working with their Departments of Public Health to secure State and County appropriations for the better care of tuberculosis patients, your Secretary secured data on construction, finances, and subsidy for County Sanatoria in the Commonwealth and

furnished this information to the States mentioned.

Your Secretary was reëlected Secretary and Treasurer of the Massachusetts Central Health Council.

By an arrangement between the Executive Committee of this League and the Massachusetts Society for Social Hygiene your Secretary was permitted to give executive direction to the work of the latter Society for a temporary period.

Your Secretary acted as Chairman of the Publicity Committee of the National Conference of Social Work held in Boston.

Your Secretary has been invited by Governor Ely to act as Secretary of the Massachusetts Committee for the White House Conference on Child Health and Protection.

Your Secretary has continued as a member of the Executive Committee of the New England Tuberculosis Association and in that capacity assisted Dr. Alton S. Pope in the preparation of the tuberculosis program for the New England Health Institute to be held at Portland, Maine, in the week of April 20.

You have had laid before you by our President and by our Educational Secretary, problems in our field which call for serious thought. I will not enlarge upon them. These with the problems of the Affiliated Organizations themselves constitute subject matter for very serious consideration and review of the programs of all of us in the light of changing conditions.

My suggestion for reëmphasis in this new year we are entering upon today is to align our programs more closely with the programs of the duly constituted health authorities—the health officers and the county and state sanatoria. These officials represent the well-considered plans of the community. Let us continue to pioneer as we have done in the past. Let us be trail blazers in the field of tuberculosis and public health; but it is my belief that much of our success will depend upon the degree to which we attain coördination and joint action with the public health authorities.

Again it is my pleasure to acknowledge publicly and with deep gratitude the splendid help we have received not only from the officers and directors of the League but from the officers, directors and executives of our Affiliated Organizations.

ANNUAL REPORT OF THE EDUCATIONAL SECRETARY*

BY MISS JEAN V. LATIMER†

THE educational work of the League for the past year has been carried on not only in the field of school health education but has been developed into the field of general health education. To discuss each:

For some years the National Tuberculosis Association and its affiliated state and local organizations have been committed to the promotion of an elementary school health education program—believing that a program of health education, which has as its objective the inculcating of desirable health habits, attitudes and knowledge in all children, is one of the most potent methods for the prevention of tuberculosis. The soundness of this policy was confirmed at the White House Conference on Child Health and Protection held in Washington last November, which your Educational Secretary was privileged to attend. A large portion of the reports at the Conference dealt with the important relation of the school to the health and protection of the child.

The contributions of the League and its affiliated associations in the elementary school field for the past year have been very satisfactory. Especially important have been the activities of the counties of Plymouth and Essex, and the cities of Cambridge and Lowell, where intensive as well as extensive assistance has been rendered local school authorities. It has been the privilege of the Educational Secretary to work with and through these organizations, as well as to render service to the other associations which have been doing more general work along this line.

The extension courses for the training of teachers and public health nurses which were developed by the Educational Secretary of the League in coöperation with the State Departments of Public Health and Education have been one of our most effective means of arousing interest and developing skill in health education. During the past year many of our local secretaries have been instrumental in bringing similar opportunities to their local cities and towns. Courses have been given in the following places: Fitchburg, Gardner, Orange, Saugus, Danvers, Milford, Rockland, Middleboro, Brockton, Lowell, Ashland, Southbridge, South Hadley, Stockbridge, Easthampton, Greenfield, Manchester, Ipswich and Upton.

While the League has continued to maintain its health education service and lending library, it is gratifying to report that many of our local associations are developing a similar service of their own. The League has, nevertheless, continued to be the clearing house not only for materials, but also methods in handling such a service, together with personal help in conduct-

*April 13, 1931.

†Latimer—For record and address of author see "This Week's Issue", page 1327.

ing health exhibits for our associations. This year for the first time our free monthly bulletin, *Teaching Health to Children,* has been printed instead of mimeographed as heretofore. The Educational Secretary is now working on a new type of health habit chart which will be available next fall for our local secretaries to distribute in their schools.

During the past year the League has continued to promote professional health education courses for teachers and public health nurses, in connection with the School of Education, Boston University. The League financed 38 scholarships in these courses. Last fall in Springfield, through the splendid assistance of the Executive Secretary of the Hampden County Tuberculosis and Public Health Association, a course for 60 members was conducted in affiliation with the Connecticut Valley Division of Boston University. This spring we are promoting two current courses, namely, "The Teaching of Health in the Junior High School" and "Child Care and Development" for home economics teachers in the secondary schools. The work of the Educational Secretary in these courses has been as follows:

1. Surveying the field to ascertain what aspects of health teaching need to be strengthened.
2. Organizing specific courses to meet this need in connection with local universities.
3. Conducting publicity campaigns and making personal contacts to interest school and public health officials in such courses.
4. Awarding tuition scholarships from the health education budget of the League.
5. Offering materials and other suggestions for the conducting of such courses, and taking part in them as a lecturer.
6. Conducting personal follow-up with individual teachers and teachers who have taken such courses.

In the development of these projects, our local associations have been most active, and their efforts in arousing local interest have been of great value; in fact, in practically all cases they themselves have nominated the candidates for the scholarships. Also, the local associations of Lowell, Lawrence, Cambridge, Norfolk and Plymouth Counties have awarded additional scholarships financed from their own budgets.

While it is difficult to measure with any degree of accuracy the results of such training, the personal follow-up of the Educational Secretary would lead her to believe that they are far-reaching in influence. Just recently on visiting a junior high school she has found that one of our former scholarship teachers has been the instrument through which an entire curriculum in health education has been built. Again, the influence has extended beyond the state—we are told that an assistant superintendent of schools of a large city in an adjoining state received his inspiration and guidance in the construction of his new curriculum in health education from attending one of our courses last year.

Again, if we use the findings of President Hoover's recent Conference on Child Health and Protection as our criterion, it will appear that even in the field of elementary school health work our contribution is not over. Whereas our past contribution has been largely that of general promotion and stimulation of individual teacher's initiative, there has been developed the need of actual demonstration as to what constitutes a good health education program. We need a program which is graded and scientific—based upon sound physical and psychological principles with educational objectives. Especially is there need of such supervision in the smaller towns and villages of the state. There is a real service to be done by the voluntary health agency in furnishing to superintendents and principals outstanding experiments in the field of health education, which have been scientifically tested according to the best educational methods.

As a result of her attendance at the recent White House Conference, the Educational Secretary has become interested in the findings as they pertain to all phases of public health work and she has already begun to analyze how our local associations may articulate a part of their future program in terms of the follow-up which is to be conducted here in Massachusetts this next year under the leadership of Dr. George H. Bigelow and the Executive Secretary of the League.

We have yet ahead of us the assistance which we must render in the development of the high school health education program. Under a new plan of attack the 1,454 tuberculosis associations of the United States are this month, through the Early Diagnosis Campaign, beginning an intensive effort to fight tuberculosis in the sector of youth. In this connection the League considers that one of the greatest needs at the present time is for the extension of the school medical service into the high schools, particularly to the continuation schools which are made up chiefly of under-privileged children who are soon to go into industry. We cannot have a well-rounded program for the protection of our children by having physical examinations and follow-up for the correction of physical defects solely for the younger children. Modern scientific progress has brought with it the tuberculin test and the x-ray and by these aids physicians can now discover cases in time to check the disease, even before any symptoms are noticeable. In this connection it is gratifying to report that the League has been conducting experimental work in x-raying and personal follow-up with the high school students in one of our large industrial cities. Also, we are coöperating with the Chadwick clinics as they are

being extended into the high schools. While tuberculin testing and x-raying is of fundamental importance, it is also agreed that one of the best ways of attacking this problem is through the promotion of a general health education program into the high schools. To quote our National Managing Director, Dr. Emerson, "Boys and girls have been discovered in active high school work, leaders in athletics and scholarship, apparently in good health, but actually with tuberculosis smothering in them soon to break into flame." For three years now we have been working on this problem and we are beginning to see results. The Lynn experiment undertaken in coöperation with the State Department of Public Health was begun in 1929. In connection with this study an experimental course in personal and community health is now being conducted for the seniors in the English High School. This course is to be included in the definite program of study beginning next fall. Also, in coöperation with the National Association, we are hoping in the fall of 1931 to employ a scientifically trained health education consultant for detailed assistance in this project.

As you possibly know, the League has for the past two years had an Advisory Committee on Health Education in the Secondary Schools—composed of members of the State Departments of Public Health and Education, school superintendents and principals, and representatives from the schools of public health at Harvard, Technology and Simmons. We are gratified to report that this committee of which the Educational Secretary is the active secretary, has already made significant progress towards crystallizing public opinion in the state on the importance of adolescent health. At present a survey is being made of the status of health teaching in the secondary schools—the follow-up of which the Educational Secretary is now conducting by personal visits and conferences with high school principals. On these visits she is making suggestions as to how the health teaching may be strengthened, and also offering the future consultation service of the League. Because of the efforts of this Committee, an entire section of the state high school principals' meeting to be held in Framingham the last of this month will be given over to the problem of the health of adolescents—at which time Dr. Wilson G. Smillie of the Harvard School of Public Health will speak. This Committee is also working for the extension of the school health service into the high school field, which must also include a more adequate type of medical examination and follow-up of all school children. Our State Commissioner of Health, Dr. Bigelow, will speak on this subject at a coming meeting of the school superintendents.

As a sub-report of President Hoover's recent Conference, our National Association was asked to make an investigation of the present status of medical examination and follow-up of children entering industry—two Massachusetts cities were included in this study—the results of which have been published in pamphlet form. The investigation would seem to indicate that the medical examination of such children is inadequate. The prevalence of tuberculosis in this age-group makes this problem our special concern. Here again we hope that our local associations through the follow-up of the White House Conference will bring this matter before the public and arouse a consciousness of this problem, concerning which it may be necessary to secure more adequate legislation.

While our educational work must be broad enough to touch all, the field of actual and potential tuberculosis is and must remain our particular concern. Our educational approach here has several angles. We need to strengthen our individual case findings by more detailed and continuous follow-up. We need to concentrate on the continuous follow-up of all summer health camp children, contacts and others who have been reported by the Chadwick clinics. Educational work with entire families who are suspects or contact cases must receive more emphasis. Reëxamination of such cases while important is of little value unless in the interim educational work has been going on. The individual case work approach must be strengthened and continued through the dangerous period of adolescence. We should be seriously asking ourselves what the present condition of our former camp children is. The reëxamination of former camp children and other cases of childhood tuberculosis as they are passing through this period should provide one important means of control over the high death rate in the early twenties. Also, such follow-up should give us an approach to the industrial situation as many such children are leaving school at this time in order to enter industry. It is gratifying to report that the problem is already receiving the consideration of several of our associations now employing full-time public health nurses for this important work. In addition to its individual case work approach, this past year several of our associations have been trying out experimental work in parental education in small groups. Noteworthy are the efforts of Lowell, Cambridge and Boston along this line. The Educational Secretary of the League has made this a special problem this past winter and has assisted many of our local associations in the development of their parental education programs.

Whether unemployment and the forced reduction in the standard of living that it causes will be of such an extent as to cause an upward trend in the tuberculosis death-rate in the United States remains to be seen. Since a period of economic depression almost invariably means

a lowering of the family budget, during the winter we have been concentrating on nutrition demonstrations and clinics with mothers of camp children, contact families, and others who have been reported by the Chadwick clinics. Through a coöperative plan worked out by the League with the home demonstration agents of the Massachusetts Agricultural College, it is possible for our affiliated organizations to secure the free services of trained nutritionists for conducting such nutrition clinics. Such demonstrations are now being carried on in Southern Middlesex, Plymouth and Northern Worcester Counties, and tentative plans are being made for the extension of a similar service to Salem, Lawrence and Hampshire, Hampden and Franklin Counties. Lowell, in connection with its parental education program, is emphasizing this phase especially and in addition to its group approach, is supervising the construction of food budgets by personal visits to the homes of camp children and other cases referred by the local board of health.

In the development of its adult program, the League in affiliation with the State Supervisor of Adult Alien Education, has this past winter conducted health classes with Americanization groups in the state—the class in Fitchburg being possibly the most outstanding. In addition, the League has arranged with the State Library Commission for the placing and distribution of health education literature in special reading rooms for the foreign-born. We are, also, coöperating with the Division of Adult Hygiene of the State Department of Public Health in its general program.

We are fortunate in being a private health organization in a State where the official department is making such a large contribution in the scientific approach as to the control of childhood tuberculosis. Because of this we have an unusual opportunity for supplementing official work. However, there is still need of a more adequate articulating of our efforts with other state and local health organizations in the field. It is the earnest wish of the League that during this next year we may ask the State Division of Tuberculosis to outline to us any apparent gaps in the 10-year program and to ask them how we may help. Certainly there is great need of educating the public. To quote the health officer of Brookline—"Every doctor is convinced of the fact that he often fails to get satisfactory results from his health measures because of the ignorance of those whose health he is trying to improve. Preventive medicine is, so to speak, marking time, waiting for health education to make possible the application of the advances in science which have been made."

If tuberculosis struck and killed instantly as a thunderbolt, perhaps the public would have a greater fear of it, but as we know it is often years after exposure that the disease begins, and it may be years after the onset before the patient is really ill or dies, so that it is difficult to associate the illness with the early beginnings of the disease. The nature of the disease is both our ally and our foe, but because of this, it is evident that in a preventive program we must begin early and be ever vigilant in our follow-up—but most important of all, we must educate the people, particularly the youth of our land, in observing daily hygienic rules of living, and to omit those activities which operate to deplete the resistance of the body. In other words, health education is still one of our most potent means of prevention, since it is wiser and cheaper to maintain health than to regain it. While it is obvious that a program of positive health can never have the emotional appeal of the curing of sickness, it is, nevertheless, a challenge to the socially minded and far-sighted citizen. How our contribution fits into the general work, it is sometimes difficult to evaluate, but we do know that progress is being made and that our efforts are counting. To quote Dr. David Starr Jordan, former President of Leland Stanford University—"Today is your day and mine, the only day we have, the day in which we play our part. What our part may signify in the great whole we may not understand; but we are here to play it, and now is our time. This we know: It is a part of action, not of whining. It is a part of love, not cynicism. It is for us to express love in terms of human helpfulness." This is the spirit which the League has in working with the large body of loyal members and executives of our local affiliated associations.

THE NEWER ASPECTS OF ANTI-TUBERCULOSIS WORK*

BY IAGO GALDSTON, M.D.†

A RUSSIAN peasant and his son were walking one hot and sultry day on a dusty road. Both moujik and son were burdened with heavy sacks. They were trudging along in silence when suddenly the moujik turned to his son and said "Ivon, there lies a horseshoe, pick it up." "Oh, but I'm too weary", the son grumbled. The peasant said nothing but turned back and picked up the horseshoe.

A little further on they came to a village and the moujik sold his horseshoe to a blacksmith for 5 kopecks. With the money he bought himself a hat full of cherries. Father and son continued on their journey, the father walking

*Delivered at the Annual Meeting of the League in Worcester, April 13, 1931.

†Galdston—Secretary, Medical Information Bureau of the New York Academy of Medicine. For record and address of author see "This Week's Issue", page 1327.

ahead munching the cherries and the son following licking his lips. The moujik dropped a cherry. The boy stooped for it eagerly, wiped it on his sleeve and ate it hungrily. Ten steps farther, the father dropped another cherry for which the son stooped again, and this performance was repeated until there were no more cherries left. Then the moujik turned to his boy and said, "You see, my son, you would not stoop once for a horseshoe but you stooped forty times for cherries." Whereupon the son, in the true Russian fashion said, "Yes my father, but it takes a great deal of wisdom to see cherries when you are looking at horseshoes."

And indeed it does! It is the wisdom of indirectness, of seeing more than the obvious, of appreciating remote relationships.

This wisdom is increasingly manifest in anti-tuberculosis work. It is particularly evident in the early diagnosis and spring educational campaigns which have been inaugurated in recent years.

I intend to illustrate and perhaps prove my thesis by dwelling upon certain recent developments in tuberculosis work, both from the clinical and public health viewpoint.

Tuberculosis was heretofore considered by the vast majority of workers as primarily an adult problem. Recently it has taken on newer aspects. Physicians, social workers and lay persons are now beginning to appreciate that in addition to adult tuberculosis, there is a childhood type of tuberculosis and furthermore that there is a differenee between tuberculosis in childhood and the so-called childhood type of tuberculosis.

Let us review the events that have led up to this recent day development.

A convenient starting point in the history of the modern anti-tuberculosis movement is the year 1882 when Robert Koch discovered the tubercle bacillus. Not long thereafter Koch reported a classical experiment which demonstrated the existenee of a body immunity in tuberculosis. This experiment established the so-called Koch phenomenon which you will recall is observed under the following conditions. When a susceptible animal has once been infected by the tubercle bacillus, reinoculation of that animal with a second dose of tubercle bacilli will elicit a tissue response not witnessed after the first infection. This response is of an allergy character showing that between the first and the second infection the body has acquired an heretofore absent power of resisting the tubercle bacillus. The realization of the existence of a tissue immunity to tuberculosis has profoundly affected our general understanding of the disease and our experimental and practical work. Witness to this is the recent and much discussed work of Calmette, in which, through the agency of a modified tubercle bacillus, the BCG, Calmette seeks to procure the immunity which comes from the presence of the tubercle bacillus in the body, without the hazard which the virulent bacillus ever presents.

Soon after Koch reported on the immunity phenomenon that bears his name, that the great Austrian physician, Pirquet, whose untimely and violent death we recently lamented, gave us the skin test named after him—a test which enables us to determine the presence of the tubercle bacillus in the animal body. By means of this test, applied widely for the study of the prevalence of infection, and through the works of others who arrived at the same conclusion by way of the autopsy, it was soon learned that a very large percentage (in certain communities amounting to 95%) of the total population over 16 years of age, were infected with tubercle bacilli.

The realization of the extensive prevalence of tuberculosis infection gave rise to a tantalizing problem, for, when it was discovered that so very large a percentage of persons were infected with the tubercle bacillus, and yet so relatively few broke down with the disease, the question naturally proposed itself—what on the one hand accounts for the breaking down of certain infected individuals, and on the other, for the lifelong resistance of others.

In the long years that have passed between the time this problem was first propounded and the present, the answer has come as the fruit of many labors. In substance the answer is that a general body resistance different from the specific immunity spoken of by Koch, plays a determining rôle in the conversion of mere infection into active disease.

In a large and sweeping manner, many have come to believe that the tubercle bacillus is not in itself sufficient to bring on active tuberculosis, but that before the tubercle bacillus can implant itself and flourish, the "soil" meaning the potential victim's body, must be receptive to it. Others are convinced that when in good functional and organic health and when not over-burdened by labor, worry and the strains of other diseases, the human body, the soil of our simile, will prove resistant to the tubercle bacillus.

To this basic conception there was added still another. Remembering the Koch phenomenon, remembering the fact that the presence of the tubercle bacillus in a body endows that body with a certain amount of resistance to reinfection, it was held that infection as such—save when too massive—or in the very young, was something to be considered almost beneficent.

With this viewpoint as a broad background, our work has been concentrated on combating those conditions which sap the vitality of the "soil", and except for the instances where infants were exposed to tuberculosis infection

from sick elders, we were little concerned with tuberculosis infection as such.

This, I believe is true of the understanding that prevailed in the field at large, a field that included not a few research workers, certainly the vast majority of practicing physicians and the largest portion of professional tuberculosis workers.

Some there were not entirely satisfied with the competence of this interpretation of the tuberculosis situation, and the literature abounds with their "exceptions".

I shall quote from these to point out that our newer appreciation of childhood tuberculosis is in substance, a higher level understanding of a viewpoint that prevailed in a circumscribed fashion for more than a decade back.

From the series of addresses which Krause incorporated in the booklets "Rest and Other Things" and "Resistance and Immunity in Tuberculosis", I take a number of quotations corroborating the viewpoint expressed on the Koch's phenomenon and the Pirquet test.

The demonstration that there is such a thing as an immunity to tuberculosis infection Krause declares to be the outstanding addition to our twentieth century tuberculosis knowledge. The Pirquet test together with Laennec's promulgation of the unity of phthisis, Villemin's discovery of the infectiousness of tubercle and Koch's revelation of the bacillus, Krause considers to be the quartet of really great episodes in the history of tuberculosis.

In his essay on "Anti-Tuberculosis Measures" delivered in November 1918, Krause has the following to say on the tuberculin test:

"How significant becomes what the Pirquet test now teaches us! If most of us harbor the tubercle bacillus, and if, at the same time a small percentage of us ever falls sick with tuberculosis, then nothing can be more certain than that the development of manifest disease, the efflorescence of a 'safe' man into a menace, depends not so much on the mere presence in us of the seed, in other words upon infection, as upon some other factor or factors that enter into our experience."

In his essay on "Tuberculosis from Childhood Infection", Krause, while unwilling to subscribe to the dogma that all adult tuberculosis is the recrudescence of childhood infection, grants freely that numerous cases of adult tuberculosis do spring from childhood implantations.

This is an expression of scientific opinion and judgment made many years ago and put on record in various addresses delivered not less than twelve years ago.

There is a deliberate purpose in the incorporation of these quotations in this paper. For part of my thesis is that the so-called newer aspects of our tuberculosis understanding, are in substance, arborizations and sproutings on the gnarled and solid trunk of tuberculosis knowledge. In consequence, when we consider what effects these newer aspects might have upon our practical program, as carried on in the field, the compelling conclusion must be that they will lead to a refinement and intensification of the practices we have followed since the beginning of this century.

Better than ever before we do appreciate the difference between tuberculosis infection and active disease. Our knowledge of the pathologic steps through which infection passes on to active disease has been amplified and furthered.

We have been armed with better diagnostic standards, standards which enable us to better determine when infection approaches or has become active disease. And by means of all this, we are now placed in a position where we may, in a sense, determine the true pre-tuberculous individual and, determining that, to institute appropriate preventive treatment.

In all of this progress, I see not a single violence done to any of our former convictions.

On the contrary, I see reassuring affirmation of our main objective and vindication for our techniques. But, our so-called newer knowledge of tuberculosis can and should have one salutary effect on our practical program. It must bring about a redistribution of emphasis in the numerous phases of our work and in bringing to the fore, perhaps more than ever before, the importance of preventing infection and checking tuberculosis in the young.

Our recent studies have impressed upon us once again what in fact has been known to all of us, and was recognized even before the discovery of the tubercle bacillus, namely that the young, in contact with an active case of tuberculosis are more liable to infection and to disease than those of the non-tuberculous, general population. It will behoove us, therefore, in the light of this to redouble our efforts to check tuberculosis in contacts. This service should not be a perfunctory gesture, in the manner in which it is witnessed in so many communities today, but should be a thoroughgoing and sustained effort.

The search in the exposed young should not be for the presence of the adult type of tuberculosis, but for evidence of infection. The extent of the infection as discernible by x-ray examination should be determined, and the condition, once defined, should be watched or treated as indicated.

It should be our obligation also to redouble our efforts in the education of the tuberculous individual to the end that he might be rendered less dangerous to his environment. In this, with but a few outstanding exceptions and most of these in private institutions, we are woefully lacking.

A sanatorium has been aptly defined as the place where the tuberculous individual learns to adapt himself to a newer mode of life.

This function of the tuberculosis institution, in sound theory, overshadows its curative or therapeutic function, and yet, to my knowledge, there are relatively few institutions in which the practice of the reëducation of the patient to a new mode of life is followed to any effective degree.

I deem it a very fitting and useful service that the voluntary tuberculosis associations throughout the country might render to their tuberculosis institutions, to help organize and carry through in tuberculosis sanatoria and in tuberculosis clinics, a system of health education which will hasten and secure the recovery of the patient and render him safe to his environment.

All of this bears on the minimizing of the hazard of the infection of the young by adults suffering active and open forms of tuberculosis.

Naturally, it is incumbent upon us to instruct the public on childhood tuberculosis so that in time there will have been developed as keen an appreciation of the significance of the childhood type of tuberculosis as there now is on adult tuberculosis. This will require a sustained, thoroughgoing and probably labored campaign of education. The public and the profession will need to be instructed that children do have tuberculosis and that tuberculosis in children is an insidious condition, not easy to discover. An equally important part of our educational campaign will be the understanding that the childhood type of tuberculosis is amenable to remedy and that the remedy principally lies in the upbuilding of the health and vitality of the child. This is a task of long duration, but one to which our tuberculosis movement may wholeheartedly dedicate itself for the next decade.

Even as in our earlier campaigns, centered on adult tuberculosis, we were often required to organize drives for the creation of cure facilities, and even as many a local tuberculosis association found itself compelled to enter local politics in order to stimulate the powers of government to the creation of county and other tuberculosis institutions, so too, in this newer drive against childhood tuberculosis we will find it necessary to stimulate and assist in the creation of adequate preventorium and other treatment facilities for childhood tuberculosis.

It would avail little merely to discover the potentially or active tuberculous child and to have inadequate or no means for his treatment. Of course, the childhood type of tuberculosis is seldom as acute nor yet as hazardous a type as that of the adult, nor does it imply to the same degree, institutional handling, be that institution a full-time preventorium or some modified form of class or home environment.

Over and above these specific avenues of attack, there must come through the tuberculosis associations of this country, an intensified general drive for better child health. Remembering that well-established and many times demonstrated truth that soil as well as seed enter into the begetting of tuberculosis, it should be the objective of the tuberculosis movement to strengthen the soil and to render it resistant to the seed of tuberculosis.

In this work, to use a hackneyed phrase, we have hardly scratched the surface. Much of the available scientific knowledge finds little place in our educational propaganda. I call in witness of this the great and valuable mass of newer information we now possess on nutrition, a mass of information that grows astonishingly with every month and which has such a vital bearing on the tuberculosis movement. It is within our power to make a telling contribution to the welfare of the child and to the upbuilding of resistance against tuberculosis by first acquiring this knowledge on nutrition and by disseminating it widely through a well-organized and intelligently directed child health education programme.

The prevention, or control where prevention is impossible, of the childhood diseases should also be our deep concern, more so than it has ever been in the past, for many of these infections, like measles and its complications, and whooping cough, are often the forerunner of tuberculosis, and practically all of the childhood infections affect the soil in a manner which we do not as yet understand, but the results of which are very evident in the lowered resistance of the child.

The removal of physical defects in children should become a larger part of our programme, for the child is a struggling constitution confronted with the exacting tasks of living and growing, and every physical defect is a drag upon the child, retarding his upward climb to healthy adulthood. And lastly, it should be the concern of the tuberculosis movement to stimulate the acquisition of good health habits and attitudes during the early years of the child. This has long been a basic activity in the tuberculosis movement, witness the pioneering health crusade, but the present situation demands that this service be rendered on a larger and more extensive scale.

The outstanding need at the present time, it appears to me, is for a better orientation in school health education, for the organization into a coherent system of the numerous and miscellaneous items in health education, with which so many of us busy ourselves. Such organization in the school health education movement will have to center about the adequate health training of teachers, the organization of an effective health education curriculum, and on the creation of serviceable educational means.

Each of these cardinal divisions represents a field in which the tuberculosis associations

might well invest time, money and effort. In fact, I fail to see how, if we are to take full advantage of our newer knowledge of childhood tuberculosis, we can escape these responsibilities and obligations.

The problems connected with school health education are undoubtedly of a very complicated nature, but the tuberculosis movement has a long and rather gratifying history behind it and vast experience which warrants our hope for a successful tackling of the subject.

Under the leadership of the National Tuberculosis Association, and with the coöperation of its numerous locals, it should be possible to gather and to organize a thoroughgoing and effective school health program. In my opinion, this would constitute a signal service rendered both to the school system and to the antituberculosis campaign.

In summarization, our newer knowledge on tuberculosis represents a progression and refinement of tuberculosis theory, and its effect upon our practical program will be that of accentuation of emphasis on prevention of tuberculosis infection among the young, to the discovery of those with the childhood type of tuberculosis, to the fortification of the soil against the seed, to the improvement of child health, and to the organization of a well-crystallized and effective school health education movement which will include the adequate training of the teacher, the organization of a practical health education curriculum and the creation of useful health education means.

PELLAGRA

The United States Public Health Service states that although pellagra has been known to be more or less prevalent in certain sections of Europe for nearly two hundred years, and in this country for almost a quarter of a century, it is only recently that the nature of its cause has been made clear and practical and effective measures for its treatment and prevention have been established. Pellagra is unlike most preventable diseases with which we have to contend, as infection appears to play no part, whatever, in its causation, and the sanitary and hygienic measures commonly employed against transmissible diseases offer no aid in its control. On the other hand, it has been definitely established by studies conducted by the Public Health Service that pellagra is strictly a dietary disease and that it is caused by an inadequate supply of an essential food element which belongs to the class of accessory food principles known as vitamins.

A deficiency of any one of the vitamins will bring about an impairment of health, and unless soon corrected, will lead to the production of disease. The diseases which are brought about in this manner are known as "vitamin-deficiency diseases", or diseases due to an avitaminosis.

It has been abundantly demonstrated that pellagra may be uniformly produced or prevented at will by simply varying the quantity of the foods which carry the antipellagric vitamin. This occurs without regard to the quantity of other foods consumed which, except for the shortage of this particular vitamin, may be in perfect physiological balance. It is, therefore, seen that pellagra, like the other vitamin deficiency diseases, is brought about by the absence of a specific and essential dietary factor and is in no way dependent upon starvation in the ordinary sense as is frequently assumed.

The various foods and foodstuffs have been found to differ widely in the quantity of the antipellagric vitamin which they supply, and this makes variety in diet of the utmost importance in the treatment and prevention of pellagra. Some foods, such as fresh lean meats, liver, milk, canned salmon and commercial wheat germ, have been found to be so rich in this vitamin that the addition of a reasonable quantity of any one of them will effectively supplement an otherwise pellagra-producing diet; other foods, including eggs, canned haddock, dried peas, soy beans, dried milk, and tomatoes, have been found to possess considerable protective value, but must be consumed in relatively large, and often excessive, quantities when depended upon as the only or principal source of vitamin G; while still others, including corn products, wheat flour, rye flour, oatmeal, salt pork, lard and the commercial lard substitutes, butter, carrots, rutabaga turnips, mature onions, sweet potatoes, molasses, and white rice are such poor sources of this vitamin that they cannot be depended upon, regardless of the quantities or combinations consumed.

MORTALITY RATES

Telegraphic returns from 81 cities with a total population of thirty-six million for the week ending June 6 indicate a mortality rate of 11.5 as against a rate of 12.6 for the corresponding week of last year. The highest rate (18.2) appears for Albany, N. Y., and the lowest (5.9) for Somerville, Mass. The highest infant mortality rate (15.5) appears for Lynn, Mass., and the lowest for New Haven, Conn., and St. Paul, Minn., which reported no infant mortality.

The annual rate for 81 cities is 13.2 for the twenty-three weeks of 1931, as against a rate of 13.0 for the corresponding weeks of 1930.

APPOINTMENT OF DR. HUGH T. CARMICHAEL

Dr. Hugh T. Carmichael, of the Medical Department of Union University, Albany, New York, has been appointed as resident psychiatrist on the Research Service, Worcester State Hospital, Worcester, Massachusetts.

MORE FUNDS FOR THE STUDY OF CANCER

By the will of Egbert Chaplin Fuller, a Connecticut manufacturer, $1,500,000 will be available for the study of cancer. The executors of the will seek the advice of physicians as to the application of the funds.

MEDICAL PROGRESS

RECENT ADVANCES IN NEUROLOGICAL SURGERY

BY TRACY J. PUTNAM, M.D.*

GENERAL

IN a remarkable paper, Foerster (*Deutsch Ztsch. f. Nervenh.* 115:248) reviews the possibility of restitution of function following lesions in various parts of the nervous system, central and peripheral. Reneurotization of a muscle by its severed nerve may occur spontaneously, but this is excessively rare. Following suture, return of function is usually slow, but early partial return has been observed, suggesting that viable fibers in the distal portion may unite with those in the proximal end. Implantation of a sensory nerve may serve to bridge gaps. End to side anastomosis is occasionally successful. A nerve implanted directly into a muscle stands a good chance of producing motor plates. Reunion of severed anterior roots is occasionally possible. In an apparently total transverse destruction of the spinal cord from tumor, the author states that he has seen almost complete recovery after years, suggesting a regeneration.

Following an injury to the motor cortex, other neighboring areas may acquire the lost function. This is at first only for associated acts, but by training these may be dissociated and brought under the control of volition. Spasticity following pyramidal tract lesions may be abolished by posterior root section, and extrapyramidal volitional control is then facilitated. The ataxia following posterior root or posterior column section may be compensated for, as may also loss of large portions of the cerebellum. Other interesting matters should be read in the original.

TUMORS AND ALLIED CONDITIONS

A general treatise on brain tumors has recently appeared from the hand of Ernest Sachs (Mosby, St. Louis, pp. 396). The diagnosis, pathology and treatment of tumors is well described. Standard procedures are discussed fully and critically, and many helpful hints evidently culled from personal experience are added. Among new suggestions is the reflection of a double flap exposing both frontal lobes in extensive frontal tumors.

In a notable paper, Cushing (*Surg., Gyn. and Obst.* 52:125) reviews his experiences with the cerebellar astrocytomas. These are the most common posterior fossa tumors of childhood, often cystic. The symptoms are sometimes only headache and vomiting.

The essential point in treatment is to remember that these tumors always originate in the vermis, although often presenting in one of the cerebellar hemispheres. They should invariably be attacked through the midline therefore. In the case of cystic tumors, recurrence is inevitable unless the mural nodule of tumor is removed. Complete removal should be carried out at one session, as secondary operations have a high mortality.

Astroblastomas, in many ways intermediate between the relatively benign astrocytomas and the malignant glioblastomas multiformes, are described in a paper by Bailey and Buey (*Acta Psych. et Neurol.* 5:30). They were formerly described as peritheliomas, cylindromas, etc., from their gross appearance. They occur chiefly in the cerebral hemispheres of adults.

The effect of radiation on medulloblastomas is the subject of a study by Bailey (*Ann. of Path.* 6:125). The tumors are sensitive to radiation, but an excess of treatment may cause scarring of the meninges. Dissemination of tumor cells throughout the subarachnoid space by operation may give rise to metastases. The author suggests a single series of x-ray treatments over the entire central nervous system following operation.

Buckley (*Arch. Neur.* 23:1203) reports a case of cerebral calculi. These structures are apparently the result of calcification of old hemorrhages or infarcts.

Elsberg (*Bull. Neurol. Inst.* 1:3) contributes a general article on the meningeal fibroblastomas, which follows in general the point of view of Cushing's Cavendish lecture and subsequent papers. He distinguishes between the *hard type*, oftenest seen in connection with the sinuses, and the *soft*, in which the attachment to the surface is often difficult to demonstrate. Both may occur in the same tumor. Intracranial pressure may be little raised by the surface growths. Electrosurgical methods are of great value in controlling bleeding. The author keeps a supply of sterile muscle from other operations in metal boxes in a special electric refrigerator for several days at a time. In cases where the tumor is attached to the falx, he finds it better to cut a bone flap extending almost to the midline, and then enlarge the defect by rongeuring, rather than turn down a flap across the sinus. Under these circumstances, the excavation of the tumor should begin next the sinus and the lateral extremity should be reserved to the last.

Allen (*Brain*, 53: 194, 1930) reports 40 cases of occipital tumor. The initial symptom was epilepsy in 30% of cases, mental dulling in 12½%, and visual hallucinations in only

*Putnam — Instructor in Neuropathology, Harvard Medical School. For record and address of author see "This Week's Issue", page 1327.

12½%. Visual hallucinations appeared at some time in about a quarter of the cases, acoustic hallucinations in 5%. Hemianopia, sometimes with, sometimes without sparing of the macula was the most frequent form of visual disturbance. Quadrantic hemianopias were also seen, and loss of the temporal crescent.

The treatment of pituitary adenomas by radiation is again recommended by Towne (*Ann. Surg.* 41:29). He reports 5 cases, of which 1 responded neither to x-ray nor to operation, 1 refused operation when radiation failed to help and "in 3 the results of roentgen-ray treatment were better and safer than could have been expected from surgical treatment", although in 2 of these operations were performed, with improvement in vision, after a trial of radiation. He suggests that the cases permanently relieved by operation are those in which the tumor is cystic, and that postoperative radiation is responsible for the improvement in the case of the solid tumors. This does not correspond with the experience of local clinics, however. It is generally agreed that radiation should be used before as well as after operation, and if vision is restored at once to normal, operation may be unnecessary. But this very seldom occurs, and indeed vision may be temporarily damaged by radiation, while operation usually gives prompt and extensive improvement, even in the case of solid tumors.

Gardner and Frazier (*Ann. Otol.* 39:974) report a series of cases of hereditary deafness due to bilateral acoustic tumors. There was a family history of bilateral deafness in 38 members, with subsequent blindness in 15 of these. The 7 affected members of the family were examined, and showed signs and symptoms of bilateral acoustic tumors. Two were verified by necropsy. The condition was transmitted as a true mendelian dominant character. Four children of the family were found to have absent vestibular responses, though hearing was normal. This confirms Henschen's observation that acoustic tumors originate from the vestibular portion.

In a case of astrocytoma of the wall of the fourth ventricle reported by Winther (*Acta psych. et neurol.* 5:45), the only symptoms for a long time were forced position of the head and vomiting.

Disturbances in temperature regulation were observed in three cases of tumor of the hypothalamic region reported by Strauss and Globus (*Arch. Neurol.* 25:506, 1931). The authors believe that this is the location of the heat center.

Deery (*J. Nerv. and Ment. Dis.* 71:383) reports a series of 170 cases of tumor in the interpeduncular region from the Brigham Hospital clinic. The article is not adapted to abstraction, but is a useful summary to use in differential diagnosis.

Deery (*Bull. Neurol. Inst.* 1:97) reports two cases of tumor in the posterior fossa, revealed at autopsy, giving visual hallucinations similar to those seen with temporal and occipital tumors.

Stammers (*Brit. J. Surg.* 18:125) presents a clinical account of the manifestations in a series of tumors and inflammations of the gasserian ganglion.

Horrax and Buckley (*Arch. Neurol.* 24:1216) review eight cases of glioma of the pons wrongly diagnosed as neurofibromas of the eighth nerve. The symptoms produced did not follow the usual sequence of tinnitus, deafness and vertigo seen in angle tumors. Operation was unsuccessful in all cases, as the tumor infiltrated not only pons but cerebellar peduncles. Astrocytomas and unipolar spongioblastomas predominated.

Buckley (*Arch. Neurol.* 23:1203) reports a case of intracerebral calculus, revealed by x-ray and verified by autopsy. It apparently represented an organized hemorrhage and removal did not appear indicated.

Frazier (*Arch. Neurol.* 24:1117) reports the findings in 30 cases classed as "pseudo tumor". The usual picture was that of a gradual onset of intracranial pressure, occasionally with focal symptoms (e.g., homonymous hemianopia) usually relieved by decompression. None came to autopsy.

In a carefully conducted experimental study in dogs, Guleke (*Arch. f. klin. chir.* 162:533, 1930) repeated Dandy's crucial experiments on the production of hydrocephalus. After obstruction of the foramen of Munro, a hydrocephalus developed as expected, but in only 10 of the 38 animals in which the aqueduct was occluded did any ventricular enlargement occur during periods of observation up to a year. Convincing photographs are shown to prove this point. Ligation of the vein of Galen led to hydrocephalus in only one of nine successful operations. The divergence of these results from the ones obtained by Dandy is difficult to explain.

Sheldon, Parker and Kernohan (*Arch. Neurol.* 23:1183) report six cases of occlusion of the aqueduct of Sylvius. Two were due to ependymal proliferation, two to multiple minute gliomata and two to an ependymitis. There was obesity in four cases, bitemporal hemianopia in one.

Orton (*Bull. Neurol. Inst.* 1:72) gives a detailed anatomic comparison between two cases of obstruction of the aqueduct, one due to a microscopic tumor, one to ependymitis. In one case the obstruction was not absolute but led to optic atrophy. Nevertheless the patient died following a transfrontal operation. In the other, the patient died following ventriculography. There was enlargement of skull and mild mental retardation in both cases. Optic atrophy, obesity and polyuria gave rise to a suspicion of pituitary disease in both.

Heuer and Vail (*Arch. Ophth.* 5:334, 1931) report four cases of arachnoiditis or meningo-

encephalitis of the chiasmatic cistern. The visual symptoms were restriction of the visual fields, central and paracentral scotomas with rapid failure of vision. Other symptoms were variable (convulsions, obesity, spasticity) or absent. At operation, a thickening of the meninges about the chiasm was disclosed. Separation of the adhesions gave partial relief of symptoms. Kuhn (ibid. 5:408) reports the results of operation on a patient with Leber's hereditary optic atrophy. The vision was temporarily improved.

A study of the false localizing signs that may be produced by a tumor at a distance is given by Dowman and Smith (*J. A. M. A.* 96:318, 1931). In 138 tumor cases, 24 presented misleading phenomena, such as bilateral or ipsolateral signs in unilateral supratentorial tumors, cerebellar or chiasmal symptoms from cerebral lesions, visual hallucinations, pyramidal tract signs and psychic disturbances with posterior fossa tumors. The article should be consulted in the original for further details.

THE HYPOPHYSIS

Although endocrinology is outside the scope of this review, two important papers on the physiology of the hypophysis demand mention (Teel and Cushing, *Endokrinologie* 6:26; *Endocrinology* 14:157). The recent important discoveries in the field are excellently covered. The papers should be read in the original, as they are already very condensed.

Frazier (*Arch. Neurol.* 23:656) gives a review of a number of patients suffering from diseases of the pituitary gland and its neighborhood. Various types of tumor are well illustrated.

HEAD INJURIES AND ABSCESSES

Fay (*J. Iowa State M. Soc.* 20:447) gives a detailed account of his routine for treating head injuries by dehydration. The patient is disturbed as little as possible, even neurological examination and x-rays being delayed. Spinal puncture is performed, the pressure measured and reduced to zero. Shock is treated by vasoconstrictor drugs and the intravenous injection of 50% glucose. When the respirations become slow and the spinal fluid is clear, middle meningeal hemorrhage must be suspected. Later treatment consists in repeated lumbar punctures, restriction of fluids and administration of magnesium sulphate. The mortality was 20.8%.

Tobey (*Arch. Otolaryngol.* 11:742, 1930) warmly recommends the use of the Bovie apparatus in the treatment of brain abscess. A conical opening may thus be made into the cavity, giving wide drainage.

Coleman (*J. A. M. A.* 95:568) reports a series of brain abscesses, treated for the most part by catheter drainage and subtemporal decompression. The types of abscesses differ so greatly that it is extremely difficult to weigh the respective values of different procedures.

Munro (*Trans. South Surg. Assn.*, 1930) reviews the literature on osteomyelitis of the frontal bone, and contributes two cases of his own. The condition is most often the result of injury, but may arise by spread from an infected sinus. Radical operative treatment is indicated, but there is a high mortality at best. A complete bibliography is appended.

An extremely practical paper on intracranial injury in the new-born is presented by Munro (*N. E. Jour. Med.* 203:502, 517). A first-born child which is hypertonic, apathetic, and has a tense anterior fontanelle and respiratory difficulty, probably has some intracranial injury. The diagnosis may be confirmed by lumbar puncture and manometry. If the baby is pale and flaccid and breathes poorly immediately after delivery, it presumably is in surgical shock. In this case the spinal fluid will be low, and the indications are to reduce treatment to the absolute minimum. In the presence of hemorrhagic disease, transfusion is indicated. Increased intracranial pressure should be controlled by lumbar puncture.

DISEASES OF THE SPINAL CORD

A review of 51 cordotomies performed at Frazier's clinic is given by Grant (*Ann. Surg.* 42:998). Of this series, 7 patients died and 2 were unrelieved. Retention of urine occurred in 10 cases, motor weakness in 7. The results were otherwise extremely satisfactory, and the operation appears to be finding a wider and wider use for the relief of pain. Many other isolated cases have been published in the past year, all with satisfactory results.

Kortzeborn (*Zbl. f. Chir.* 1930, 986) and Hohlbaum (ibid. p. 979) report favorable results with the operative treatment of chronic adhesive spinal meningitis and pachymeningitis. The condition appears to arise sometimes as a result of metastatic infection, sometimes as a result of hemorrhage, sometimes without known cause. Careful dissection of and separation of adherent surfaces, rather than removal of diseased tissue is aimed at. Myelography is of value in indicating the exact level of the lesion.

Fraser (*Surg. Gyn. and Obst.* 5:162) reports a rare case of cystic dermoid tumor of the spinal cord, operated upon with recovery.

Sachs and Kaplan (*Arch. Neurol.* 24:1133) report two cases of tumor of the filum terminale, both successfully operated on. The most prominent symptom was retention of urine.

Learmonth and Braasch (*Surg. Gyn. and Obst.* 51:494) recommend resection of the presacral nerve for the relief of residual urine retention in "cord" bladder. They report one successful case.

Treatment of presenile paralysis agitans by

section of the column of Burdach is proposed by Puusepp (*Fol. Neuropath. Eston.* 10:62). In one case reported, rigidity was relieved, though the tremor persisted. The resulting ataxia was not serious.

Reports of successful operations for the relief of syringomyelia have become very frequent during the past year. The most easily available case is Frazier's (*J. A. M. A.* 95:1911). A review of the literature and report of three cases is to appear shortly from this clinic.

Delherm and Morel-Kahn (*Am. J. Surg.* 9:302) report the results of x-ray treatment in 159 cases of syringomyelia. Improvement was obtained in 79%, mostly early cases. The authors attribute this to the action of the rays on young glial tissue, likening it to a tumor. Radiation must be given over a long time and a large area. The relationship between syringomyelia and tumor is not clear. Certainly the process is neoplastic in some instances, but a hereditary form has recently been described in a certain strain of rabbits (Ostertag, *Zbl. Path.* 48:166, 180).

Härtel contributes a scholarly and well-written article on the use and abuse of alcohol injections (*Arch. f. klin. chir.* 156:374). In regard to the *cause* of trigeminal neuralgia, he calls attention to the frequent tenderness of arterial trunks (Valleix points), to the flushing of the face at the moment of ganglion injection, and to the occasional appearance of trigeminal neuralgia following cervical sympathectomy. However, he is unable to draw any definite conclusions. He recommends the addition of ¼% phenol to the novocain used for superficial injections. Elaborate directions are given for the injection of the ganglion according to his technique. If the first needle does not reach the foramen, he leaves it in place and plants another beside it, and so on until one enters the nerve. Recurrences occur in 19 to 31% of cases.

PERIPHERAL NERVES

Important new information concerning operations for trigeminal neuralgia is given by Frazier (*J. A. M. A.* 96:914, 1931). In cases in which he has left intact the first division, he has never had corneal ulceration or return of pain. He has known of two patients who did have corneal ulceration following section of the root at the pons through the posterior fossa. On some occasions, he has divided the supply of only one branch, if the pain was strictly limited. Important technical hints are given in the paper, which should be read in the original.

In the same issue (*J. A. M. A.* 96:916, 1931) Glaser again calls attention to the use of trichlorethylene for the relief of trigeminal pain.

A new method for alcohol injection of the gasserian ganglion has been worked out by Irger (*Ann. Surg.* 42:984) on the cadaver. He has not used the method clinically. The foramen ovale and the articular tubercle lie in the same frontal plane, and at an equal distance and equal angle from the angle of the jaw where the needle is entered. There is less danger of wounding important structures by this route and it is shorter than Härtels and easier than Harris' (according to the author).

Hesse (*Verhandl. d. Russ. Chir. Trilogov. Gesellsch.* 1930) recommends extracranial section of the glossopharyngeal for neuralgia as being safer than intracranial and equally satisfactory. The diagnosis in the author's case was confirmed by a hypersecretion of saliva of high specific gravity from the parotid on the side of the lesion.

The use of live tendon or fascial grafts to support the paralyzed face after lesions of the 7th nerve has been suggested by Blair (*Ann. Surg.* 42:694) and by Fischer (*Ann. Surg.* 39:334, 1929). The grafts are introduced subcutaneously through a small incision in the temporal region to the corner of the mouth, or like a purse-string about the orbicularis. By these means it is possible to restore the symmetry of the face to a remarkable degree. The operation was originated by Kirschner. The authors make no mention of the use of massage, which usually accomplishes the same result if conscientiously carried out.

Ballance (*Arch. Neurol.* 25:1) reports the results of implantation of the central stump of the cervical sympathetic into the distal stump of the facial nerve in animals. Atrophy was prevented and reflexes recurred in most instances.

Lewis and Hart (*Ann. Surg.* 42:961) have reinvestigated all the tumors of peripheral nerves available for study at the Johns Hopkins Hospital. They fall into the following groups:

Neurinomas (with palisade arrangement of the nuclei and reticular structure), 11.

Sarcomas, 3.

v. Recklinghausen's disease without tumors of deep nerves, 5.

Do. with deep nerve tumors (malignant 4, benign 7), 11.

Localized cutaneous neurofibromatosis, 1.

Tumors of neck, one showing ganglion cells, 2.

Further description of them should be read in the original.

A review of a series of 7 cases of traumatic brachial plexus injury is given by Shallow (*Ann. Surg.* 42:182), who urges early operation in all cases.

Injection of phenol into the central stump of an injured nerve is recommended by Besvserseviko (*Nov. chir. Arch.* 18:552, 1929) to prevent neuroma formation on the basis of experimental work. Other standard methods of dealing with the stump were found useless.

SPECIAL DIAGNOSTIC METHODS

Pancoast and Fay (*Radiol.* 15:173) have published extensive papers on the indications for encephalography and its technique. It appears to be generally agreed that increased intracranial pressure is a contraindication, but that under other circumstances it is a safer procedure than ventriculography. Plenty of air should be used, and the head manipulated during injection to make sure the ventricles are filled.

Camp and Waggoner (*Arch. Neur.* 25:128) describe a special chair for encephalography. The lumbar puncture can be performed in the lateral position and the patient then raised for air injection. The head may be fixed. The chair is on a wheeled truck so that changes of position are minimized. A special x-ray stand is used with which films may be taken at any angle. The authors use an intravenous anaesthetic and state that by this method the patient's discomfort is greatly decreased. They have used it in cases of tumor without ill results.

Foerster (*Zts. Neur.* 126:683, 1930) reports identifying tumor cells in the spinal fluid of 11 cases of brain tumor of various kinds. The cells were stained with a methyl green-pyronin solution.

Mandelboim (*Zeits. f. d. ges Neur. b. Psy.* 126;781, 1930) reports the chemical analyses from fluids of many cases of brain tumor. Changes are frequent, but not characteristic.

THE WAR FOR HEALTH

While important victories have unquestionably been won in the warfare against disease, medico-scientific advances have not kept pace with other branches of science, which have virtually remade the world in which we live. Humanity is still beset by ills and diseases which belong to the Middle Ages and should have been conquered long before this. Influenza and pneumonia are just as fatal today as they were centuries ago, the common cold which causes more deaths and economic waste than any other malady still baffles all attempt to discover its nature, origin and cure, and countless other ailments that menace human health remain unsolved mysteries. The last half century has surrounded us with results of inventive genius that seem to have canceled the word impossible, yet the quest for the relief of human suffering has lagged far behind.

It remained for the United States, which has led all nations in scientific advancements, to open the way for a new era of world-wide research in the field of medicine and public health. Through the passage by Congress of the Ransdell bill one year ago, and the creation of the National Institute of Health in Washington, the whole world of science will be united for the first time in the greatest effort ever made to ascertain the physical forces detrimental to health and to conquer disease.

In this institution, devoted solely to study, investigation and research in problems relating to the health of man, every available facility will be provided to aid and encourage scientists to fathom the causes of illness and physical suffering, and all medical knowledge and every advance in the promotion of human health will be pooled and correlated. Science will focus its attention directly upon matters of life and death, and there is no way of foretelling what the eventual benefits to humanity will be.

Former Senator Joseph E. Ransdell of Louisiana, author of the bill and executive director of the recently created conference board of the National Institute of Health, when emphasizing the need of greater research in medicine, said:

"Our lagging in the matter of medical research has not been the result of the inefficient mentality of our scientists, but, on the contrary, the lack of facilities and the discouraging insufficiency of funds to stimulate recruits in science."

At the new medical research center experts in all branches of medical science will conduct planned researches in a chemico-medical laboratory, and, through a system of fellowships, scientists will be assigned to definite problems in endowed institutions in this and other countries. Funds will be provided by Federal appropriation and by private donations which the institution has been authorized to accept for the furtherance of its work in the same manner as donations are received for the Smithsonian Institution and the Library of Congress.

The work of the National Institute of Health is to be conducted under the direction of the Surgeon General of the Public Health Service and the past year has seen considerable progress made in its organization. The Hygienic Laboratory has been turned over to and made part of the new institution, and plans are being made to use adjacent lands for the construction of additional buildings. Donations are being received. The first, a gift of $100,000 for the founding of one or more fellowships, was from Dr. Francis P. Garvan of the Chemical Foundation and was quickly followed by others.

Thus the American Government has issued a formal declaration of war against the enemies of health and furnished science with a new and powerful weapon of attack. Washington will become the most important medical center in the world. In this city will be started new researches in cancer on a greater scale than ever before attempted; new investigations into the cause and cure of infantile paralysis and heart disease; new studies of influenza, pneumonia, the common cold and numerous other widespread maladies to which all are heir. Here will be found new and better methods of cure and treatment, new and greater safeguards of health. And here may be made new discoveries to alter the whole course of medical history and work untold benefits upon countless millions of suffering human beings.—*The Evening Star.*

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 17251

THREE MONTHS' COUGH WITH ASCITES

MEDICAL DEPARTMENT

A French widow sixty-five years old entered April 23 complaining of cough of three months' duration.

For two years she had had diarrhea. Two years before admission she was told in the Outpatient Department of this hospital that she had diabetes. She was put upon the diabetic régime and said she followed it carefully. She was not given insulin. Four months before admission she had vomiting of green material with indefinite abdominal pain. She went to a hospital, where x-rays of the gastro-intestinal tract were made. She understood that they showed nothing. She was discharged unrelieved. Three months before admission she had a severe cold. In the Outpatient Department she was given medicine to stop the cough. It gave no relief. She had cough continuously, more at night. There was little sputum and no blood. At present she had three or four black watery movements a day and was so weak that she could not walk, although she had not been confined to bed. For three months the sight of food had nauseated her and she had taken only a little cocoa or soft solids. She still had some pain, which she localized in the lower half of the abdomen and described as dull, shifting in a circular manner and grinding. She said she vomited just what she ate almost every day. Her diabetes was very mild and did not trouble her. During the past two weeks she had grown markedly weaker. Her weight had fallen from 175 pounds to 135 in the past two years.

The family history is not significant. Her husband and one of her five children died of spinal meningitis.

The past history is entirely negative except for some dysuria and retention.

Clinical examination showed an emaciated woman who appeared to be moderately ill. The skin was dry and warm and showed evidence of considerable loss of weight. The heart and lungs were not remarkable. There were fine moist râles at both bases posteriorly. The abdomen was huge and distended, with fluid wave and dullness in the flanks. Pelvic examination showed prolapse of the bladder, rectocele and a badly lacerated cervix. Rectal examination was negative except for a few hemorrhoidal tabs. The extremities and reflexes were normal. The left pupil was deformed by an old operation for removal of a cataract. The reactions were normal.

The urine was normal in amount on the three occasions recorded. A catheterized specimen showed a specific gravity of 1.018, a very slight trace of albumin. The sediment was loaded with many clumps of leukocytes and showed 2 to 4 red cells per field. Two urine cultures showed colon bacilli and Gram-positive diplococci. Blood examination showed 12,000 to 11,300 leukocytes, 82% polynuclears, 2,950,000 reds, hemoglobin 70 per cent. The smear was normal. There is no record of a Hinton test. Three stool examinations showed no blood, guaiac negative. The icteric index and the van den Bergh and liver function tests were normal.

The temperature was 98° to 101.5° with daily evening rise. The pulse was 90 to 125, the respiration 20 to 45.

X-ray examination with a barium enema was unsatisfactory as the patient was unable to retain the enema. The barium, however, passed to the cecum and the entire bowel appeared spastic with the exception of the cecum, which was markedly dilated. There was some mottling in the region of the rectum. Proctoscopy was suggested. There was marked dullness in the right chest. A chest film showed soft mottled dullness throughout the greater part of both lung fields. The changes were more extensive on the right than on the left. Near the angle of the scapula the normal lung markings were entirely obliterated. Both of the lung fields were dull. There was considerable obliteration of the lung markings. Beneath the scapula there was a large bright spot suggesting a cavity.

Examination of the chest on April 24 showed the greatest motion on the left. Anteriorly on the right there was dullness and bronchial breath sounds with crepitant râles. Whisper and spoken voice were well transmitted. The heart sounds were poor in quality and rapid, with an accentuated pulmonic second sound. There was pitting edema up to the midback but no edema of the legs.

April 25 an abdominal tap was done and 7000 cubic centimeters of red grossly bloody fluid removed. The specific gravity was 1.024. The fluid showed 215,000 red cells, 150 leukocytes, one polynuclear and two lymphocytes. No tumor cells or organisms were found.

The patient was drowsy and ate little. A large firm tender mass was felt in the right lower quadrant. She went rapidly downhill, refusing all nourishment. She had much unproductive cough and very rapid respiration. She remained mentally clear until her death on April 30.

Clinical Discussion

BY RICHARD C. CABOT, M.D., and GEORGE W. HOLMES, M.D.

NOTES ON THE HISTORY

Dr. Cabot: I have often commented on the fact that patients' statements about "black movements" are to be taken with a little sodium chloride. Anything darker than usual they call black. We should not take that to mean tarry stools.

Naturally enough she grew markedly weaker with so little food and so much vomiting and diarrhea.

As we come to the physical examination we have two sets of symptoms that especially need explanation. One is chronic cough and the other is gastro-intestinal disturbance with diarrhea, vomiting and pain. The emaciation, of course, is due to lack of food. Except for the diabetes the past history is not important.

NOTES ON THE PHYSICAL EXAMINATION

Apparently then from the heart and lung examination we do not explain the cough. I had been wondering if it was a cardiac cough due to passive congestion, which might be suggested by those râles at the bases, but from the negative examination of the heart that seems rather improbable. So the cough remains so far a mystery.

If that hemoglobin record is taken literally it would give an extra high color index. I do not take it so. A hemoglobin of 70 per cent is very improbable. I take it that hemoglobin is a mistake.

The negative liver tests seem to me of considerable importance.

The proctoscopy apparently was not done.

Dr. Holmes: The chest film shows a very high diaphragm on both sides, although some of that elevation may be due to the fact that the patient was lying down and the films were taken from behind. That probably makes it look higher than if the patient were standing. The dullness described is quite evident, particularly on the right side, more marked at the roots and spreading out into the lung field like a pneumonic process. Here is the area spoken of as a probable cavity, and I think it probably is one. There is quite a sharp margin. It is dark in the center, and around it the density of the lung tissue is increased. It is a fairly good sized cavity.

Dr. Cabot: What about that shadow at the other base above the diaphragm? Is that the heart?

Dr. Holmes: Yes.

Dr. Cabot: Is it in the normal position?

Dr. Holmes: It lies more horizontal in the chest than is normal, probably due to the high diaphragm. I cannot make out the right border of the heart. It does not appear to be enlarged.

The only film I have of the colon was apparently taken after nearly complete evacuation of the bowel. You see the barium scattered along through the colon. The patient has some barium down in the sigmoid and rectum. The only evidence we have there is of irritability of the bowel, not enough from which to draw any conclusions.

Dr. Cabot: There is nothing there to suggest malignant disease?

Dr. Holmes: Nothing in that film. But irritability of the colon and difficulty in retaining an enema often accompany malignant disease. In this note they mention the fact that the patient was unable to retain the enema. Very few people with normal colons cannot retain an enema. It is likely to occur when the patient has malignant disease or ulceration from any other cause. I do not think there was enough in this case to be important.

Dr. Cabot: That is a very important x-ray examination, especially of the chest, because we had that remarkable negative stethoscopic finding, "nothing wrong in the lungs".

They made another chest examination April 24, presumably in the light of these findings Dr. Holmes suggested. This seems to me a beautiful example of how x-ray examination stimulates the physician. If you know things are there you can find them very much more easily than if you do not.

1.024 for a specific gravity in the abdominal fluid is a very important figure which I shall comment on in a moment.

DIFFERENTIAL DIAGNOSIS

I have found it convenient for differential diagnostic purposes in cases like this to start with the fact of ascites, because it is a symptom for which we have relatively few causes and we can generally exclude all except one, bringing us down to a satisfactory diagnosis. Of course the chief causes of ascites are heart edema, kidney edema, malignant disease with mesenteric circulatory obstruction, liver trouble, especially cirrhosis, and tuberculous peritonitis.

We have not enough wrong in the heart so far as I see, provided the examination of the heart is better than the first examination of the lungs, —we have not enough wrong with the heart to cause all this fluid in the abdomen. The amount of fluid in the abdomen is out of proportion to that in the legs. I think the heart as the cause of ascites can be excluded.

Secondarily, kidney trouble. One does not have an enormous accumulation of fluid in the belly with nephritis unless there is edema elsewhere; besides which we have no evidence in the urine on which to make any such diagnosis.

Thirdly, cirrhosis of the liver. That is not very common in women. It generally shows marked retention by the liver function test.

Otherwise it cannot be excluded by any facts here. Of course it will not account (as another diagnosis will) for the other facts in the history above. Still it might perfectly well be cirrhosis of the liver *plus something else*. It would be extraordinary however so far as I know to have cirrhosis with a normal liver function. That seems to me very important evidence. Supposing that test was accurately done, I think it is almost enough to throw out cirrhosis.

Malignant disease with obstruction is a possibility. It is one of the two things that we know which will give us such a high gravity fluid. I find it hard however to say where the malignant disease is. There is no evident sign of obstruction in the intestine. They said a gastric x-ray was done in another hospital. The patient was told that it showed nothing. Cancer of the stomach with metastases is a possibility, although we have not much to support it. We did not make any examination of the gastric contents. In this hospital she did not have a gastric x-ray. That lump felt in the right lower quadrant might be malignant disease. In that position it might be a very low cecum or possibly some other organ, it is not easy to say just what. Malignant disease does cause fever, but not very often. It does cause bloody fluid. The fact that this fluid is bloody is distinctly in favor of malignant disease. I want for the present therefore to hold malignant disease as a possibility, the other possibility being tuberculous peritonitis, which seems on the whole more probable than anything else. Tuberculous peritonitis would go perfectly well with the signs in the chest which Dr. Holmes has shown us. It goes very well with a high gravity fluid. It sometimes produces bloody fluid, though much less often than malignant disease does. It would account, through involvement of the intestine, for the irritability of the colon that Dr. Holmes illustrated. Tuberculosis of course is not uncommon as a complication in diabetes and could easily produce a mass of glands or gaseous material in the region of the cecum so as to explain that lump. I see nothing that could not be explained by tuberculosis of the lungs, the intestines and the peritoneal cavity. The satisfactoriness with which a single diagnosis explains all the facts seems the chief reason against supposing malignant disease somewhere in the abdomen in addition to tuberculosis of the lungs, which it seems to me we must suppose. I do not think anything else will give that picture in the lungs.

Dr. Holmes: If we are correct in saying that is a cavity, the lung condition is almost certainly tuberculosis. If we are mistaken, it could be bronchopneumonia.

Dr. Cabot: Could it be metastatic nodules?

Dr. Holmes: Yes, but not with cavitation.

Dr. Cabot: We are resting pretty heavily on that cavity. How often are you wrong about cavities?

Dr. Holmes: Reasonably often.

Dr. Cabot: Then we must remember the fact that the patient has not coughed up anything in this hospital, or if she has nothing has been said about it. She had very little sputum and raised no blood in the history outside.

On the whole then the diagnosis seems to me to rest between generalized tuberculosis and a malignant disease which I cannot locate but which if it is present must be supposed to be obstructing the outflow to produce this ascites. Either malignant disease or cirrhosis with phthisis would account for the secondary anemia and for the other facts in the case. The thing that bothers me is the bloody fluid. Most cases of tuberculous peritonitis do not show bloody fluid. The blood may have been due to the tap. I assume however that it was not. The blood, then, is a point, not a conclusive one, against tuberculous peritonitis. If it is a malignant disease and we are going to make that account for the whole case, we shall have to say this is malignant disease in the chest too; and although I know very little about that, the x-ray appearance does not look to me like metastatic nodules as I have usually seen them in the lung.

Isn't there anything to say about these pulmonary apices, Dr. Holmes?

Dr. Holmes: No. They are practically covered by the bony structures.

X-RAY INTERPRETATION

The appearance in the chest might be due to advanced tuberculosis.

SPUTUM EXAMINATION

Two specimens of sputum showed many tubercle bacilli.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Advanced pulmonary tuberculosis.
Intestinal tuberculosis.

DR. RICHARD C. CABOT'S DIAGNOSES

Tuberculosis of the lungs.
Tuberculous peritonitis.

ANATOMIC DIAGNOSES

Tuberculosis of the lungs with cavity formation.
Carcinoma of the fundus of the uterus.
Abdominal carcinomatosis.

Pathologic Discussion

Dr. Tracy B. Mallory: We found a very marked pulmonary tuberculosis with a cavity occupying the entire right upper lobe. The peritoneal cavity still contained a considerable amount of ascitic fluid which was still bloody.

It was studded with tiny nodules, 1, 2 and occasionally 3 millimeters in size, which easily could have been mistaken for miliary peritoneal tubercles. Dr. Bradley however suspected that they were not and did a frozen section at the time. He found they were carcinoma. Then he started a careful search and found carcinoma of the fundus of the uterus. From the metastatic foci it seemed that generalized cancer had developed.

DR. CABOT: Was there no cancer anywhere outside the abdomen?

DR. MALLORY: No.

DR. CABOT: Was the intestine itself normal?

DR. MALLORY: The intestine was entirely negative. We looked through it carefully in search for the primary focus of the cancer and no suggestion was found.

DR. CABOT: There are two lessons one gets from this case. One is the importance of the blood in the ascitic fluid. You remember I did stick a good deal over the blood in the abdominal fluid, because blood should not be there in tuberculous fluid, though I have seen it. Secondly, we see the danger of following the usually safe rule of explaining everything by one diagnosis, which usually is a safe thing to do statistically,—that is, results usually back you up when you do it.

CASE 17252

A PELVIC TUMOR WITH RATHER UNUSUAL ETIOLOGY AND SEQUELAE

SURGICAL DEPARTMENT

PRESENTATION OF CASE

DR. GEORGE A. MARKS*: This is the case of a female patient seventy years old who came into the Emergency Ward complaining of lower abdominal pain of four weeks' duration, principally in the right lower quadrant. It was quite severe, present almost every day and sometimes felt like a heavy ball in the right side.

During that four weeks' period she complained of a great deal of distention and increasing constipation. The pain seemed to shoot upward into the chest occasionally. She thought it was around her heart at times. Even before the onset of this she had not been feeling very well, had lost weight and felt weak. For a year she had had a crampy feeling in the legs. Occasionally her legs were cold, she said, and her toes blue, so that she had to walk around to relieve this circulatory stasis. There were no other definite symptoms, however, until four weeks before entry.

We were watching closely for a history of blood. The only thing she could say when we questioned her about it was that one stool was what she described as tarry.

She came into the Emergency Ward in good condition, with a temperature of 100° and a slightly elevated white cell count. She was sent to the ward. The next morning her temperature was down to normal.

Examination showed moderate abdominal tenderness, not at all tense, and a large mass which completely filled the pelvis. It seemed to occupy the position of the uterus. On moving it one could not outline the fundus of the uterus. A proctoscopy was done. The proctoscope could not be passed beyond the level of the upper portion of the rectum. Up to that point the mucous membrane was apparently normal. A barium enema showed a constant defect about two inches in length at the rectosigmoid junction. Above this the bowel filled fairly normally. Evacuation of the barium was retarded. Two stool examinations in the ward were negative for blood. One stool was formed, the other watery. The urine was negative except for evidence of a mild cystitis.

She was in the ward five days before operation. She had a low grade fever part of that time with a temperature of 101.5°.

In view of the obvious obstruction and the mass a diagnosis of pelvic tumor, presumably in the uterus or over it, was made.

Exploration was done. A mass was found and at the time of operation it was thought to be retroperitoneal. It was felt through the pelvis and apparently surrounded the sigmoid. The sigmoid seemed to disappear in the mass. She was not in good condition, so that the abdomen was closed immediately after exploration. A biopsy was done.

She returned to the ward in fairly good condition and came out of the anesthesia that evening. The blood pressure was normal and the patient was fairly comfortable that night. At five o'clock in the morning she said she felt well and had slept well. The nurse returned a few minutes after this and found the patient cyanotic and dyspneic, with a blood pressure of 70/50. She complained of a little substernal pain. The house officer was called. When he reached the ward the patient was dead.

DR. TRACY B. MALLORY: What was your discharge diagnosis, Dr. Marks?

DR. MARKS: The discharge diagnosis was pulmonary embolus and pelvic tumor.

DR. GEORGE W. HOLMES: The deformity is well demonstrated in this film. There is a peristaltic contraction at this point. A lesion of this size arising from the mucosa of the gut would, I should think, cause more obstruction. There is nothing in the character of the lesion that would enable one to distinguish between a cancer arising from the gut and one arising outside it and involving it. I should hardly expect it to fill the whole bowel and show no obstruction above it if it was primary in the colon.

In the chest film the diaphragm is high on the left side. There does not seem to be any ex-

*Recently senior interne on the East Surgical service.

planation for it. The heart is not displaced. There are no mediastinal masses and no consolidation. With the diaphragm as high as that there might be something behind it which it would be impossible to demonstrate. The apex on the left seems to be a little more dense than that on the right, but the film is underexposed and the difference might be due to overlying soft tissue. There is nothing striking about her heart or mediastinum.

DR. EDWARD L. YOUNG, JR.: Is that picture compatible with pressure of something not involving the intestine but simply causing pressure on it from outside?

DR. HOLMES: I should hardly think so. If the gut is not adherent to the mass it ought not to flatten out in this way.

DR. YOUNG: I think it is surprising what large inflammatory masses of tissue we get with no obstruction of the gut. I wonder if that was at all possible here.

DR. HOLMES: My observation is the same as yours, that it takes a great deal of pressure from the outside to cause obstruction unless the viscus is involved in the tumor mass. I do not think we need to consider that here at all.

DR. CHESTER M. JONES: Were there any regional metastases?

DR. MARKS: Yes, there were. I believe one of the glands in the mesentery of the rectosigmoid was enlarged.

DR. JONES: Were there any glands on physical examination?

DR. MARKS: The cervical glands were moderately enlarged.

DR. ARLIE V. BOCK: Was the blood smear looked at before operation?

DR. MARKS: No.

DR. HOLMES: This whole picture might be due to diverticulitis with abscess. I think that it is a little unusual to find a localized lesion without evidence elsewhere. Of course a patient may have a number of diverticula and we may not see them or they may be hidden behind a mass. With a patient of this type it is difficult to get a good view of the bowel. When the possibility of diverticulitis is raised the patient should be followed for a number of days. Oftentimes this is not done.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Malignant retroperitoneal tumor.
Pulmonary embolus.

ANATOMIC DIAGNOSES

Carcinoma of the sigmoid.
Diverticulum of the sigmoid with rupture and abscess formation.
Thrombosis of the left femoral vein.
Pulmonary embolus.

PATHOLOGIC DISCUSSION

DR. MALLORY: This case showed a complicated local lesion, both diverticulitis and cancer. That is rather an interesting combination. The cancer was a circular growth which was however restricted to one side of the intestine, not annular. In the center of the circular lesion was what we thought at first was a deep perforation. On further investigation it seemed obvious that the apparent perforation was really a diverticulum, that the cancer had grown around the entire mouth of the diverticulum but that it had not involved the deeper part of the diverticulum itself. The diverticulum had ruptured and there was a local pelvic abscess about 5 centimeters in diameter containing pus and feces immediately connected with the base of the diverticulum.

The immediate cause of death was, of course, as was suspected, a pulmonary embolus. The entire right ventricle was filled with coiled thrombi. Thrombi were also found in both major branches of the main pulmonary artery, and smaller thrombi in the smaller vessels pretty well out towards the periphery of the lungs. The lungs were unusual in that there was a very marked degree of collapse of the peripheral portions of both lower lobes most of the way around without any collapse in the central portions at all. It is the type of collapse I have seen often with fluid in the pleura, occasionally in a case where the diaphragm is very high with marked abdominal distention; the type which one might get with pneumothorax again; but it is quite uncommon as a form of postoperative collapse.

There was cystic degeneration of the cervix and endometrium.

A PHYSICIAN: What was the source of the embolus?

DR. MALLORY: A thrombus in the left femoral vein.

DR. JAMES C. WHITE: Had that patient been on thyroid extract following the operation?

DR. MARKS: Yes. Thyroid extract is given as a matter of routine to all postoperative patients for ten days on the East Surgical service.

DR. WHITE: As I understand it, that is done in the hope of preventing pulmonary embolism. During its use, however, I believe the number of these accidents has been just as great as on the West service, where it is not administered.

DR. MALLORY: What was the time interval there?

DR. MARKS: It was less than twenty-four hours.

DR. JONES: How frequently do you get malignant degeneration around diverticula? I have supposed that infection rather than cancer is the risk if there is any.

DR. HARRY F. HARTWELL: I think malignant degeneration does occur, but not very often.

DR. MALLORY: I have seen several cases.

DR. HARTWELL: Yes. I have seen several which I thought came from diverticula.

DR. HOLMES: Do you think the high position of the diaphragm was due to collapse, or was the collapse due to it?

DR. MALLORY: I do not know. It was a most unusual type of collapse.

DR. FREDERICK T. LORD: This type of collapse was described in 1861 by Bartels in pneumonia complicating measles.

DR. HOLMES: Of course there is no possibility of showing it on the films, but I have noticed on looking over the cases taken now after operation that many of them show a high diaphragm with limited respiratory excursion without the characteristic signs of massive collapse, and I wonder if this thing does not occur with considerable frequency.

DR. MALLORY: It is possible that this is simply an earlier case of collapse than we are accustomed to seeing.

DR. LORD: There is a marked reduction of vital capacity after abdominal operation as Churchill and McNeil and others have shown. This may be ascribed to interference with thoracic expansion from pain, constriction by surgical dressings and abdominal distention with resulting elevation and restriction of the diaphragm. Overholt* finds that the normal subatmospheric upper abdominal pressure becomes positive in dogs after laparotomy with resulting elevation and diminished respiratory excursion of the diaphragm. Some retraction atelectasis may therefore be expected after abdominal operations and bronchial plugging from retained secretion may then more readily occlude already narrowed bronchi.

In a series of 25 patients with upper abdominal operations, Muller, Overholt and Pendergrass** found definite diminution in chest volume in all. In 16 cases there was x-ray evidence suggesting atelectasis and in 3 a major pulmonary complication.

DR. HOLMES: Don't you think that is true of our cases?

DR. LORD: In a review I made with you and Donald S. King of fifty-three patients with postoperative pulmonary complications, there was x-ray evidence of varying and for the most part minor degrees of atelectasis in twenty-two.

*Air in the Peritoneal Cavity; its Effect on the Position and Activity of the Diaphragm. Arch. Surg. Vol. 21, pt. II, p. 1282, Dec. 1930.

**Arch. Surg. Dec. 1929, Part II, p. 1322.

The New England
Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY under the jurisdiction of the

COMMITTEE ON PUBLICATIONS

HOMER GAGE, M.D. JOHN W. BARTOL, M.D.
ROGER I. LEE, M.D. ROBERT B. OSGOOD, M.D.
EDWARD W. TAYLOR, M.D.

EDITORIAL STAFF

DAVID L. EDSALL, M.D. STEPHEN RUSHMORE, M.D.
REID HUNT, M.D. HANS ZINSSER, M.D.
JOHN P. SUTHERLAND, M.D. BENJAMIN WHITE, PH.D.
GEORGE R. MINOT, M.D. HENRY R. VIETS, M.D.
FRANK H. LAHEY, M.D. ROBERT N. NYE, M.D.
SHIELDS WARREN, M.D. ROBERT M. GREEN, M.D.

WALTER P. BOWERS, M.D., *Managing Editor*

ASSOCIATE EDITORS

GEORGE G. SMITH, M.D. WILLIAM B. BREED, M.D.
JOSEPH GARLAND, M.D.

THE NEW HAMPSHIRE MEDICAL SOCIETY
PUBLICATION COMMITTEE

D. E. SULLIVAN, M.D. H. H. AMSDEN, M.D.
R. H. MARCOTTE, M.D.

THE VERMONT STATE MEDICAL SOCIETY
PUBLICATION COMMITTEE

WILLIAM G. RICKER, M.D. C. F. DALTON, M.D.
J. A. WARK, M.D.

SUBSCRIPTION TERMS: *$6.00 per year in advance, postage paid for the United States, Canada $7.04 per year, $7.56 per year for all foreign countries belonging to the Postal Union.*

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the Journal office, 165 Newbury Street.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The New England Journal of Medicine, 165 Newbury Street, Boston, Mass.

BEHAVIOR DISORDERS IN CHILDREN WITH ENCEPHALITIS

SOON after the onset of encephalitis lethargica, in the latter years of the Great War, it was noticed that the disease produced late manifestations of great gravity, the most common of which was the development of the Parkinson syndrome, leading to paralysis and incapacity. This effect has usually been seen in adults. In the case of children, although the Parkinson syndrome has been present in some instances, a much more constant finding has been a change of personality with behavior disorder. Children, formerly normal, have become some of the worst offenders against society and have made themselves intolerable to the community in which they live.

It has been necessary, in the past, to send children of this type to prison or to mental hospitals for adults. Both procedures have only served to make the mental condition worse; the children were either contaminated by prison conditions or their miseries were aggravated by the presence of adult patients with mental disease. Home life was practically impossible; there are cases on record where children have been actually put in cages in their own homes, so difficult were they to handle.

In order to overcome this unfortunate state of affairs, the Department of Mental and Nervous Diseases of the Pennsylvania Hospital, in Philadelphia, began special classes for post-encephalitic children in 1924. The children lived in quarters in the hospital specially set aside for them. Between 1924 and 1930, sixty-two children of this character, twelve years of age and under, have been received at the hospital and most of them have been kept under observation for five or more years. The results have been extremely good*. Patients with the worst kind of behavior characteristics before entering the school have become, to a very large extent, socially adjusted.

The work at the Pennsylvania Hospital, therefore, of a pioneer variety, has brought excellent results. Teaching and supervision of this type should be extended to all the states in the Union. There is a growing need for care of these post-encephalitic children and certainly prison life, or life in a hospital for adult mental patients, is not the correct way to handle the problem. Special instruction in a well-equipped hospital school, under trained teachers, is the only adequate solution. Conditions in Massachusetts, moreover, are extremely bad; we have no special facilities to care for patients of this type. In New York an attempt, fairly successful, to care for these children in a state hospital has been in force for a few years. Although not quite so successful as the Pennsylvania Hospital experiment, it is, at least, a method which might be inaugurated with advantage in one of our own state institutions.

*The Treatment of Behavior Disorders Following Encephalitis: An Experiment in Re-Education, by Earl D. Bond, M.D. and Kenneth E. Appel, M.D. New York: The Commonwealth Fund Division of Publications, 1931. 163 pages. $1.75.

RABIES

ON May 12 last a young Waltham man was bitten on the nose by a dog. Suffering with rabies, he was taken to a hospital. The mayor of Waltham has been requested to have dogs restrained for ninety days.

This is the second rabies case of this year. Since there is no published report of the subsequent history of the dog that bit this young man it may be that other dogs are infected in that section of the State and an outbreak of the disease may occur at any time.

There were at least five hundred rabid animals in Massachusetts last year and the State Health Commissioner feels that the general public is not coöperative in dealing with the menace of rabies.

This disease is one of the especially horrible afflictions of mankind but many persons have never had friends afflicted with it and are skeptical of its existence.

Physicians should take occasion to impress on the people that rabies exists and must be met by active measures. Obstructionists may be responsible for human deaths.

THE OFFICERS OF THE MASSACHUSETTS MEDICAL SOCIETY FOR 1931-1932

THE PRESIDENT

DR. HALBERT GREENLEAF STETSON

THE TREASURER

DR. CHARLES SHOREY BUTLER

At the Council Meeting, held June 9, 1931, the following officers were elected: President, Dr. Halbert Greenleaf Stetson; Vice President, Dr. Thomas Horatio McCarthy; Secretary, Dr. Walter Lincoln Burrage; Treasurer, Dr. Charles Shorey Butler; Orator, Dr. Samuel Bayard Woodward.

Dr. Burrage has filled the office of Secretary since 1909 and personally as well as officially is well known to the Fellows. His continuous service is a tribute to his popularity and efficiency.

Dr. McCarthy served the Society throughout the preceding year as Vice President and he has been continued in office, we infer as a recognition of his standing and as a representative of one of the active and influential District Societies.

Dr. Stetson, Dr. Butler (who succeeds Dr. A. K. Stone as Treasurer), and Dr. Woodward will fill their respective positions for the first time.

The officers of the District Societies, Sections and members of committees will be found on the second advertising page of the *Journal* as soon as reported by the Secretary.

At the Annual Meeting of the Society recognition of the efficient service of the retiring Treasurer was expressed by a unanimous vote.

Herewith we present brief records of the incoming President and Treasurer.

Dr. Halbert Greenleaf Stetson was born in 1868, graduated in medicine from the University of Maryland School of Medicine and College of Physicians and Surgeons in 1895.

He settled in practice in Greenfield, Mass., and worked in association with Drs. Twitchell and Canedy for twenty years up to 1925, thus acting as a pioneer in organized group practice. He joined the Massachusetts Medical Society in 1895 and has represented the Society in the House of Delegates of the American Medical Association since 1912. He is a Fellow of the American College of Surgeons, member of the New England Surgical Society, and Surgeon to the Franklin County Hospital. He has been Medical Examiner of his district since 1922.

He has been active in civic affairs in Greenfield as shown by membership on the School Board and President of the Chamber of Commerce for 1922-1923.

He brings to the Presidency a record of efficiency in the several offices occupied and a broad understanding of medical affairs through an active practice and membership on important committees.

Dr. Charles Shorey Butler was born in Boston, Massachusetts, July 6, 1870. He prepared for college at G. W. C. Noble's School and was graduated from Harvard College in 1893 and Harvard Medical School in 1897. He served in the East Surgical Service of the Massachu-

setts General Hospital and taught anatomy in the Harvard Medical School. Dr. Butler was assistant accident room surgeon in the Massachusetts General Hospital and conducted a private practice for several years in Boston. He is a member of the Association of Military Surgeons and served at intervals from 1915 to March 1917, first under the auspices of the French Red Cross, later being transferred to the French Army Reserve. He was with the Aviation Section of the U. S. Army in the United States from June 21, 1917 until March 1919. Dr. Butler is now retired from active practice.

THE ORATOR

The Orator, Dr. Samuel Bayard Woodward, is widely known as the war-time president of the Massachusetts Medical Society who, contrary to recent custom, served in that position for three years. He has been the militant leader in the crusade against smallpox in advocacy of his bill to extend the provision of compulsory vaccination to pupils of private schools. His oration will be anticipated with interest.

THE AWARD OF THE BIGELOW MEDAL

THE BIGELOW MEDAL

THE Boston Surgical Society in a survey of the eminent members of the specialty of surgery selected an English Colleague, Professor George Grey Turner of Newcastle-upon-Tyne, England, as the recipient of this medal. Professor Turner has visited the United States on several occasions.

He was also a guest of the Massachusetts Medical Society during the sesquicentennial exercises and made a brilliant addition to the program of the surgical section by his paper on "The Paget Tradition." The Bigelow Medal was awarded to him on Wednesday evening, June 10, in the Georgian Room of the Hotel Statler when he addressed the members of the Society and invited guests.

The exercises were opened by Dr. Stephen Rushmore in the following address:

The Boston Surgical Society welcomes you all this evening and appreciates highly your interested presence at these offices of ours—duties laid upon us by the donor of the Bigelow Medal, which are the more pleasant this evening in that we have as our guest of honor a surgeon of distinction from a distant city across the sea. He represents some qualities of the surgical mind to which more explicit reference will be made by our President in a few moments. I desire to dwell briefly on some other qualities of the surgical mind which may be useful indeed though not always comfortable.

There is to be noticed in certain members of the surgical profession a methodical orderliness, a kind of systematic procedure, which gives the impression of reasoning and reasonable power. But again and again attention has been called also to qualities sometimes opprobriously described as a tendency to lawlessness on the part of the surgeon. Whether these are due to heredity, to inheritance of elements introduced by the bar sinister of the barber surgeon, or whether they are due to the environment of war and the traumatic incidents thereto, in which to so great an extent the progress of surgery has developed, at least until recent years, I do not say. But even in times of peace, I think the hospital administrator finds the surgeon a little more difficult to constrain within the limits of a smoothly running machine. The so-called lawlessness, however, I as a surgeon would be inclined to interpret rather as the expression on the part of the individual of a desire to be a law unto himself, of notable examples of which I might remind you by names from the distinguished history of Boston in these past three hundred years. The strongly centrifugal forces are still at work, and it was, we must recognize, but a recent achievement that this Society, a coöperative enterprise, was formed in 1914.

But the name, the Boston Surgical Society, and what gifts of imagination were necessary for the creation of a denomination so signally appropriate, this name was already the possession of another organization when the present group was brought together. There had existed for several years a kind of surgical journal club of younger men, but when representations were made to them concerning the desires of the older surgeons, they gladly gave up their name. Whether it was that the sacrifice took all their strength, or whether it was that their new name, the Boston Chirurgical Society, was more than

they could bear, or whether it was that the larger and more comprehensive society more nearly filled the needs of the community and made unnecessary the continual existence of the earlier organization, I do not say, but the smaller society quickly passed away. I pause to place a figurative memorial wreath upon the metaphorical grave of the generous hearted youths of that day.

This Society, since its inception, has provided a forum for discussion of the problems of surgery, as they appear to the most active practitioners and most thoughtful students of the science, and of the art in this community, tending gradually to temper those centrifugal forces to which I have referred, which will always be at work among strong individualists as many surgeons prove themselves to be, and by a showing of ideas stimulating its members to more vigorous efforts toward the solution of their common problems. It plays a part of increasing usefulness, as the years go by, in promoting the welfare of the science and art of surgery, a noble branch of what is to us who worship at its shrine, the most lovely of all callings.

But we have another very pleasant duty. We meet from time to time, as on this occasion, to express formally and explicitly our recognition of the attainment of distinction in surgery by some one of our colleagues in the profession. Tonight this recognition of distinction will be expressed by the President of our Society, Dr. Fred Bates Lund.

Address by Dr. Fred Bates Lund

In 1915, when Dr. George H. Monks was president of our Society, Dr. William Sturgis Bigelow gave the Society a sum of money, the interest of which should be devoted to the presentation of the Henry Jacob Bigelow Medal to some surgeon of peculiar eminence in our profession. The medal receives its name in honor of his father, Dr. Henry Jacob Bigelow, eminent in Surgery in this community for many years, a great teacher, a brilliant operator and a real leader. His contributions on the reduction by manipulation of dislocations of the hip, and his perfection of the lithotrite and evacuator for removal of stone in the bladder have assured him a permanent place in the history of surgery. He dominated the profession in New England in a way that only his contemporaries could fully appreciate, and was one of the outstanding figures in the surgery of the last century in our country. These medals have been presented, in 1921, to Dr. W. J. Mayo, to Dr. W. W. Keen in 1922, to Dr. Rudolph Matas in 1926, and Dr. Chevalier Jackson in 1928. It is one of the pleasantest requirements for the awarding of this medal that the surgeon so honored be present in person and deliver an oration on some subject in surgery that is near to his heart. The subjects of the addresses in the past have been: Dr. W. J. Mayo, "In the Time of Henry Jacob Bigelow"; Dr. W. W. Keen, "Sixty Years of Surgery: 1862-1922"; Dr. Rudolph Matas, "The Spirit and Art of Surgery"; Dr. Chevalier Jackson, "Bronchoscopy: Past, Present and Future."

The occasions of the presentation have been notable and distinguished. The Society has been itself honored in doing honor to these leaders of our profession, and has profited by the inspiration that their presence has given us. We who know the mind, the character, the scientific spirit, the humanity and the incessant toil that are required to attain real eminence in this our profession, prize the associations of such an occasion as this as no one else can. We know what we all have tried to do, with more or less success, namely to advance our profession. Those who have had the highest success in such attainment we regard with admiration, almost with reverence.

This occasion is the first in which the Society has presented the Bigelow Medal to a representative of Surgery in our mother country, that country from which so many of our ancestors came and to which the earlier members, such as the Warrens and the Bigelows, went to sit at the feet of the masters in our art, and acquire by contact with them the knowledge and skill which they had to have in order to lay the foundations of our profession in a pioneer land. England, the country of our forefathers, gave us our language, our leaders in civic life, our laws, our customs, and in earlier days our surgery. Though we have progressed far, in fact unbelievably far since the early days, we still go to the British Isles for knowledge and inspiration. In the great centres of London and Edinburgh there have been great men, but still in the smaller cities of England, Scotland and Ireland have developed surgeons whose work has contributed in the very highest degree to the benefit of mankind and the honor of our art. At once there leaps to our mind the memory of such men as Sir Joseph Lister in Glasgow, Sir Harold Stiles in Edinburgh, Teal, Mayo, Robeson, and Lord Moynihan in Leeds, Rutherford Morison in Newcastle, and many others equally eminent.

By his own exertions and in the City of Newcastle, a provincial city, as they say in England, brought up in the school and under the leadership of Rutherford Morison, our guest of this evening has attained the highest distinction as a citizen, a surgeon and a man. Twenty-one years ago when we all were that much younger, on the first trip of the Society of Clinical Surgery to England, we had a most delightful visit at Newcastle, where we saw the sterling work of Rutherford Morison and the work of his young

associate, our guest, and I can witness that what we saw was good. He showed us some specimens of carcinoma of the intestine and tumors of the kidney, which were huge and horrible in appearance, and the patients who had parted with them were fat, smiling and well. It was a heartening experience to visit him at Neweastle again this summer, and find the same sort of thing going on. During these twenty-one years he has never let up, but has kept right on performing wonders. His contributions to literature have been many and important, his service in the war most distinguished. He came to this country and delighted our hearts with the John B. Murphy Oration at the meeting of the American College of Surgeons at Philadelphia last autumn. A reference to "Who's Who" for 1931 will demonstrate that he is certainly who. This is approximately what it says: He is George Grey Turner, Fellow of the Royal College of Surgeons of England and Honorary Fellow of the American College of Surgeons. He was born in 1877 at North Shields. He received his education at the University of Durham and at King's College. He studied in Vienna. Throughout the war he served with distinction in the Royal Army Medical Corps at home and overseas, where his duty led him to Egypt and Mesopotamia, and in 1918 to the United States as a member of the War Office Delegation. He was Acting Consulting Surgeon at Amara, Consulting Surgeon and Specialist in Chest Surgery to the Northern Command. He is now Senior Honorary Surgeon at the Royal Infirmary, Newcastle-upon-Tyne, Professor of Surgery in the College of Medicine in the University of Durham, and Member of the Council of the Royal College of Surgeons of England, and former Examiner in Surgery at the University of Sheffield. He is a Fellow of the Royal Society of Medicine, and in 1928 was President of the Association of Surgeons of Great Britain and Ireland. He was orator of the Medical Society of London in 1929, and is a Fellow of that same Society. He is a Fellow of the Medical Society of Sweden and an Honorary member of the Post Graduate Medical Assembly of the United States of America, and, as mentioned above, delivered the John B. Murphy Oration at the Congress of Surgeons in Philadelphia in 1930. During 1929 he was in charge of the Professional Unit at St. Bartholomew's Hospital and is now one of the six perpetual students at that hospital, an honorary distinction of which he is justly proud. He is Honorary Consulting Surgeon to the Tynemouth Infirmary, and last but not least, a member of the Barber Surgeons Company and Freeman of the City of London. He has made over one hundred contributions to the literature of our profession, dealing with Cancer of the Colon, Cleft Palate, Implantation of the Ureters, Gall Stone Ileus, Enlarged Prostate, and other subjects. He has traveled much and gathered knowledge from the leading clinics of the world, which is one reason for his great success in Newcastle-upon-Tyne. It is good to have him come to see you, but better to go and see him. He is also an archeologist, and if he has the time will show you the wonderful Roman Wall, whose eastern end is at Neweastle. Surely he has been a surgeon, a writer and a traveler of note, and well has he served his country in both peace and war. In the war in which he gave such brilliant and devoted service, we can thank God that we were engaged, not as enemies, as in the distant long forgotten days of yore, but as allies. Without England to serve with France as the backbone of that war, our own contribution would have amounted to but little.

A sketch from "Who's Who" after all does not give us a picture of the whole man. We have him here though, all of him, "totus, teres atque rotundus". When you see him, clasp his hand and talk with him, perhaps my brief and halting account of his achievements may help you to form a fairer estimate of his real character and worth. I am going to give him the Medal now, even before I have heard the oration, because he has earned it anyway, and I know well that his contribution will be worthy of the good surgeon that he is. So I think I will take the risk. Professor George Grey Turner, in the name of the Boston Surgical Society, I have the honor to present to you the Henry Jacob Bigelow Medal for excellence in Surgery.

In accepting the medal Professor Turner expressed his grateful appreciation of the honor conferred and delivered a lecture on "Some Experiences in the Surgery of the Oesophagus" in which he gave his experience in dealing with oesophageal stricture illustrating the recital with numerous lantern slide drawings and photographs of diseased structures pertaining to the subject.

His lecture was without manuscript for he used only a few notes which served to assist the orderly presentation of his thoughts. The recital was a demonstration of the master of the subject under discussion.

Professor Turner has promised to prepare a paper for publication in the *Journal* which will be a permanent record of his lecture.

A BIOGRAPHY OF GEORGE W. GAY, M.D.

A Surgeon of Boston 1842-1931

BY DAVID CHEEVER, M.D.

Not again, I think, shall we Boston physicians, in mourning the death of a venerable colleague and reviewing his life, be carried back in retrospect to a period before the Golden Age of Medicine—before the day of the Roentgen

ray, of local anaesthesia, of instruments of precision, of serum and vaccine therapy, of the thousand and one commonplaces of modern medicine,—back even to a time when Lister had scarcely begun to dream of using the discoveries of Pasteur of the cause of fermentation and putrefaction for the control of surgical sepsis,—back to the days when erysipelas, pyemia, septicemia, and hospital gangrene were the likely ending of any accidental or surgical wound. Yet,—so short is this Golden Age of Medicine,—in recording the death of George W. Gay and the career which it terminated, we must search for its beginnings in the Dark Ages of Medicine, when indeed the dawn was heralded by the advent of cellular pathology, of organic chemistry, of experimental physiology and of surgical anaesthesia, but the radiant sun of modern medical science was still below the horizon.

How often does a sketch like this begin with the preamble: "He came of good old New England stock!"—And so it was in this case, for the progenitor, John Gaye was of Winthrop's band of Puritans who in 1630 settled the Bay Colony. Later, in 1635 to him was granted a freehold in the township of "Contentment",—now Dedham, and in and about that neighborhood still may be found descendants. One of these, Willard Gay, migrated to New Hampshire, and there on January 14, 1842 on a farm in Swanzey was born a boy,—named no doubt by his patriotic parents for the Father of his Country.

Doubtless he led the life of the average New England boy of the period,—a college education was not his good fortune. Why he turned to medicine I do not know, but tradition says that he was deeply moved by the fatal illness of a little sister, and determined if possible to devote himself to learning how to treat and cure such human distress. On money borrowed from an uncle—for his father's death had deprived him of parental support,—he apprenticed himself for a year to a famous practitioner of Keene, N. H., Dr. George B. Twitchell and then in 1864 entered the Harvard Medical School where he purchased tickets for and presumably attended the two prescribed courses of lectures. Among his teachers were Holmes and Bigelow and Storer and Jackson, and he must have dissected under the eye of the then Demonstrator of Anatomy, young David W. Cheever, who had just been appointed on the Surgical Staff of the newly founded City Hospital. There was no grading of students into classes, no direction of their work, no required laboratory work,—and indeed no laboratories—except the dissecting room;—no required clinical work, ward visits or contact with patients of any kind except some form of apprenticeship to be entered into as it suited the student and without direction from the school, and then, at the end of three years, a very perfunctory examination in which the candidate need pass only a majority of the subjects. The students usually chose to "walk the wards" when opportunity offered, perhaps twice a week, as a relief from the tedium of didactic lectures, and the Saturday public operating day at the Massachusetts General Hospital furnished drama and excitement. Gay describes a ward visit during the first winter of the City Hospital's existence: "The visiting surgeon was usually given the right of way by courtesy, but with the (thirty or forty) students it was everyone for himself. They crowded about the beds as best they could; * * * often the less energetic or the indifferent ones on the outside of the circle, unable to see or hear much of anything, would stroll about the ward until corralled by the nurse and directed to their proper place. The more earnest students were not long in finding out the most interesting cases and would take especial pains to get in the front row at these beds and ignore the others; it was 'catch as catch can'."

One of the School years, 1865-6, he spent at the State Almshouse Hospital on Rainsford Island in Boston harbor; then in 1867-8 he secured by examination a post as surgical house-officer at the City Hospital. They were proud of the examination in those days, because the Massachusetts General awarded its posts on personal solicitation of young men known to the Trustees or Staff, and the examination system was thought by its sponsors to insure the winning of the honor by merit alone. There were two surgical services each with a single interne whose duties included the care of house-patients, accidents, emergencies, laboratory work, the keeping of records, attendance upon, recording and often the making of autopsies, assisting at operations, etherizing for the other service, and taking entire care of out-patients for one-half of the time. Moreover, the nurses of the day were not permitted to do many things; the house-officer usually made the hypodermic injections and did the cupping and leeching. "The clinical thermometer was just coming into use, and a formidable and expensive instrument it was,—ten or twelve inches in length, bent at an angle to allow of its use in the axilla and not self-registering, it required ten or fifteen minutes' exposure to ensure reliable results." Such were young Gay's occupations during this year of service as house-surgeon in 1867-8. Infection of all kinds was rife; there were nineteen deaths from pyemia during the year; sepsis at one time was so common that surgeons dreaded to amputate a finger or toe; union by first intention was so rare an event that it was talked about for weeks and never forgotten. The house-surgeon was taught to differentiate "laudable pus" which was thick, creamy and relatively odorless, and the other less-to-be-praised form which was thin, scanty and of foul odor, doubtless the product of the

streptococcus or the bacillus of gas gangrene. It is difficult to believe that the lifetime of a man to whom we have just bidden farewell could compass the progress of medicine since those dark ages.

His medical degree from Harvard and his diploma from the City Hospital won simultaneously in 1868, young Gay with the courage and self-confidence born of youth and inexperience, married and opened his office on Tremont Street in the South End (a region then disputing with the "Back Bay" for the honor of affording homes to the élite). His assets appear to have been good health, character, courage, a professional education, an attractive personality and plenty of debts:—what better capital for such a man! He must have been, with Michael F. Galvin (one of the two first house-officers and his senior by a few years) one of the first surgeons appointed (it was in 1868) to conduct the surgical out-patient department, for in April 1871 they appealed to the Trustees for more room for this work. In 1872 he received his appointment to the visiting staff.

Thus began a lifetime of active service to an institution which Dr. Gay always felt conferred upon him the greatest advantages and privileges of his career, and his biographer can add that the account was fully squared by the ability, enthusiasm and loyalty with which he served the hospital. Such queer folk are doctors!—the opportunity to do hard, serviceable, exacting, anxious work without pay constitutes for them the satisfying life. "Two, four or six hours work at the hospital in the morning, a large private practice including three to six hours of work in the office, frequent calls to the hospital for accidents and emergency operations night and day every day in the week,—such was the life of active surgeons of those days." A frequent emergency (usually occurring at night!) was tracheotomy on a cyanotic, gasping, struggling child choking with diphtheritic membrane in its larynx. The younger members of the staff striving to secure a place in the sun in conservative Boston for themselves and their hospital, did bold operations, tried new methods, absorbed new ideas, held clinics, wrote papers. They were among the first in Boston to try "Listerism". "The earliest attempt was made by Dr. George Derby who opened an abscess of the leg with the limb submerged in a tub of carbolic solution." War was waged against the hypothetical microbic enemies in the air by means of the continuous carbolic spray generated first by a hand- and then by a steam-atomizer, and against the organisms infecting wounds, by means of the bulky copal-varnished silk protective and the carbolic, resin and paraffin-impregnated gauze dressings of Lister. New methods were tried, improvements made. Remembering from the first the pure air, pure water and pure soil of Hippocrates, and eagerly grasping and making use of every new antiseptic method as it appeared until the perfection of asepsis was reached, these men deserve unstinted credit for the results that they achieved. But one invasion by that scourge of armies and hospitals, — hospital gangrene, occurred, in 1875;—there were eleven cases with six deaths, and the enemy was quickly conquered by cleanliness, isolation, the vacating of wards, suppression of operations and such primitive antiseptic methods as were then in use.

Through these things lived Dr. Gay and in them he played a leading part. He ligated the innominate artery, the common carotid artery twice and the subclavian artery, all for aneurysm. Four times he repeated the operation first performed by Cheever in this country, for the removal of foreign bodies from the oesophagus. He was a careful conscientious surgeon, who studied his patients minutely, rehearsed the conditions and steps of operative measures beforehand and prepared himself to meet emergencies. He performed most of the accepted operations of the day and was alert and progressive in helping to till the new field revealed by the aseptic method, although naturally the more advanced surgery of the great body cavities suddenly made possible in his more mature years fell into the hands of younger men.

In accordance with his oft-spoken views that the control of clinical material imposes a privilege and a duty to share with others the education which it gives, Dr. Gay wrote and taught, both among laymen and physicians. For many years he was a lecturer on surgery in the Harvard Medical School, and the writer remembers well his sane, practical teaching, often of an aphoristic quality which made it striking. "Remember, gentlemen, that every sprain of the wrist is a Colles fracture, and every contusion of the hip is a fracture of the neck of the femur until proved otherwise," is one of his terse epigrams which hangs in memory. He was a frequent contributor to medical literature on many topics, among them: "The Medical Treatment of Malignant Disease"; "Tracheotomy in Croup and Diphtheria"; "The Use of Opium in Senile Gangrene"; "The Diagnosis of Fracture of the Hip"; "Ligature of the Innominate Artery"; "Appendicitis"; "The Acute Angle Treatment of Some Elbow Fractures." He was especially interested in anaesthesia and contributed a chapter to the "International Text Book of Surgery." The "Medical and Surgical Publications of the Boston City Hospital" contain many of his papers and he was one of the editors of the History of this hospital. Despite the fatigues of his busy life he was a constant attendant at medical meetings, carrying out his avowed belief that the exchange of views and comparison of experience with his fellows are the best ways

for a physician to keep abreast of the times, and that Medicine can best serve the public and preserve its standards by the maintenance of a strong organization,—a doctrine that needs greatly to be emphasized in this day of forces which tends to disintegrate the solidarity and strength of the profession. He made several trips to Europe to meetings of the International Medical Congress and of the British Medical Association of which he was a member for many years.

At the age of fifty-two, after doubtless having caused much of his abdominal misery for fifteen years, his appendix vermiformis made known its crimes in terms even then unmistakable and an abscess was drained by Maurice H. Richardson. Relief ensued but not recovery and when symptoms a year later forced the disclosure that it had been impossible to remove the appendix, Dr. Gay's indomitable will forced a wisely reluctant surgeon to operate again. It proved to be a difficult but happily successful job, though like many a man whose stride in the prime of life is broken by serious illness, the patient never quite regained his former physical vigor and had to relinquish the active practice of surgery.

To such a man an inactive life was not to be thought of, and he found congenial tasks in promoting the public welfare of his profession. His service as President of the Massachusetts Medical Society in 1906-8 was a fruitful one. He added to the Society's code the Medical Defense Act by which the Society furnishes counsel to a Fellow who may be sued for alleged malpractice; he resuscitated and stirred into activity a hibernating Committee on State and National Legislation and made it an active agent at the State House in supporting wise and attacking unwise bills related to public health matters; he was successful in promoting and cultivating cordial relations between the Society and the American Medical Association which at times had been somewhat strained. For years thereafter, though holding no office, he devoted much time to public health matters, appearing before legislative committees and writing for public instruction papers on such topics as vaccination, cancer and the social evil. For years he was an active and interested Trustee of the Wrentham State School for the Feeble-Minded.

Dr. Gay married in 1868 Miss Mary E. Hutchinson of Milford, N. H., who lived but a few years. In 1875 he married Miss Grace G. Hathorne of Boston, who survives him. There were no children. The list of medical societies to which he belonged includes most of the local organizations, of many of which he was President, and also the American Surgical Association, of which he was one of the earliest Boston members, and the British Medical Association. He served as consulting surgeon to various of the lesser hospitals in New England. He felt great interest in the constantly arising problems concerning the social and economic relations of physicians to each other and to the general public, and established a permanent lectureship on medical ethics at both the Harvard and Tufts Medical Schools. Having observed during his long life many instances of financial disaster overtaking physicians on account of their lack of business experience, their traditional credulity or their failure to safeguard their future by saving and investment, he founded also lectureships to instruct students in these matters. No better examples could be cited to show the warmth of his feeling for the members of his profession and the very practical turn which it took.

Such is a prosaic account of the incidents of Dr. Gay's career;—of his intimate personality and thoughts it is more difficult to speak, partly because these things are harder to understand and describe and partly because nearly two generations—measured by years—separated us. The reason why, in spite of the disparity in years, I knew him so well and why I am writing this, is that for fifty years he carried in his heart an image of my father as a teacher to be respected, a colleague to be trusted, a friend to be loved, an example of a serviceable career to be imitated, above all other men. I know this because he told me so many times, and because it is written plainly enough in the tribute which he wrote when the older man died nearly sixteen years ago. Loyalty was with him an instinctive mental attitude which did not need or perhaps even heed the dictates of reason; Harvard was always the best School and he made it, I believe, his residuary legatee; the City Hospital was always as nearly perfect as such an institution could be; his profession was the noblest and a life spent in its pursuit the happiest, in spite of doubts which might be suggested by the march of events. Thus also his loyalty to the older man descended to the son whom it makes wince a little and feel humble-minded when he thinks of its unreasoning scope.

As a little boy I remember him in my father's office, stopping, as he left a conference of the surgical staff of the City Hospital, to put his hand on my shoulder and ask me if I were going to be a doctor. He looked very big and rugged, with masses of black hair and a full black beard just beginning to be tinged with gray. Then I recall him at an amphitheatre clinic at the Hospital; the hair and beard were now iron-gray, the brown eyes more deep-set, the brows more bushy. He talked simply and clearly of the common and everyday complaints of the patients, treating them kindly and considerately and demonstrating with big bony hands the things which were to be displayed. Then next I see him on a warm June day visit-

ing his old friend in his retirement in Dedham, where the shade of John Gaye doubtless strolls along the lanes of Contentment. The hair and beard, as abundant as ever, are now snow-white, but the step is strong, the voice clear and the manner as frank and direct as ever. The two old friends walk about and to the visitor are pointed out the ripening strawberries and early vegetables, the flowers, the cows and calf; and I must answer questions relating to the modern world of medicine, until Thomas, whose black face has grinned a welcome and goodbye from my father's carriage for well-nigh fifty years,—drives our visitor to his train.

And finally the twilight years find him in his own retirement at Chestnut Hill, living in the comfortable, modest affluence won by hard and pleasure-giving work and frugality, still with the companionship of a devoted wife,—a companionship which had endured for over half of a century. During these years his faculties were alert and his senses nearly undimmed. He read unaided the current news in the daily and weekly papers, and always the *Journal* in which this sketch appears. His interest in the world at large was as keen as though he were actively participating in its doings. My visits to him at this time were contests in which we vied to see whether he could get from me more of current medical news and gossip than I could from him of reminiscence and anecdote, so precious because their source is so fleeting. At intervals when health and weather allowed he would join a group of old friends,—an octogenarian lunch-club,—at the Harvard Club. There were Edmund H. Stevens and John L. Hildreth of Cambridge; Edward Cowles, former Superintendent of the City Hospital; Abner Post, his associate on the hospital staff, and Samuel H. Durgin, for forty-five years Commissioner of Health of the City of Boston. Death has claimed three of these, but of the two who remain one is still able with scarcely diminished vigor to delight three generations of doctors with his wit and shame them by his faithful attendance on professional obligations.

The final months were not free from the discomforts, the vexations and even the sufferings which must attend a long illness in extreme old age, but he must have found real pleasure from the ministrations of nurses, whose profession he had done so much to aid, and from the daily attendance of a skillful and devoted physician* who thus repaid to him the kindness and help received from him during a house-surgeon service of nearly forty years ago. And thus finally passed away on Memorial Day this admirable man, whose courage and loyalty were as unchanging and whose principles were as lofty as the granite mountains of the State which gave him birth.

*Dr. Herman T. Baldwin of Chestnut Hill.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

LAHEY, FRANK H. M.D. Harvard University Medical School 1904. F.A.C.S. Director, Lahey Clinic. Surgeon, New England Baptist Hospital and New England Deaconess Hospital. His subject is: "A Method of Two Stage Abdominosacral Removal of Cancer of the Rectum." Page 1279. Address: 605 Commonwealth Avenue, Boston.

WIGGIN, SIDNEY CUSHING M.D. Harvard University Medical School 1920. Anesthetist, Faulkner Hospital, Jamaica Plain. Assistant Anesthetist, Boston City Hospital. Instructor in Clinical Anesthesia, Harvard University Medical School. His subject is: "Recent Trends in Anesthesia." Page 1283. Address: The Longwood Medical Building, 319 Longwood Avenue, Boston.

ALLEN, FREEMAN*. A.B., A.M., M.D. Harvard University Medical School 1899. Associated with the Staff of the Massachusetts General Hospital; Children's Hospital; Massachusetts Eye and Ear Infirmary; Sturdy Memorial Hospital, Attleboro; and Lecturer at Harvard Medical School. His subject is: "Respiratory Complications in Relation to the Administration of Anesthetics." Page 1288.

O'NEIL, E. EVERETT A.B., M.D. Harvard University Medical School 1920. F.A.C.S. Junior Visiting Surgeon, Boston City Hospital. His subject is: "Thrombophlebitis in Varicose Veins." Page 1293. Address: 270 Commonwealth Avenue, Boston.

LORD, FREDERICK T. A.B., M.D. Harvard University Medical School 1900. Clinical Professor of Medicine, Harvard University Medical School. Visiting Physician, Massachusetts General Hospital. President, Massachusetts Tuberculosis League. Vice-President, American Association for Thoracic Surgery. His subject is: "Certain Aspects of the Problem of Tuberculosis in the Commonwealth of Massachusetts." Page 1296. Address: 305 Beacon Street, Boston.

KIERNAN, FRANK A.B. Executive Secretary, Massachusetts Tuberculosis League. His subject is: "Annual Report of Executive Secretary." Page 1297. Address: 1148 Little Building, Boston.

LATIMER, JEAN V. B.S., M.A. Educational Secretary, Massachusetts Tuberculosis League. Her subject is: "Annual Report of the Educational Secretary." Page 1300. Address: 1148 Little Building, Boston.

GALDSTON, IAGO B.S., M.D. Fordham University School of Medicine 1920. Secretary, Medi-

*Deceased.

cal Information Bureau of the New York Academy of Medicine. Consultant in Health Education, National Tuberculosis Association. Instructor, New York University. His subject is: "The Newer Aspects of Anti-Tuberculosis Work." Page 1303. Address: 2 E. 103rd Street, New York City.

PUTNAM, TRACY J. A.B., M.D. Harvard University Medical School 1920. Instructor in Neuropathology, Harvard Medical School. Assistant Visiting Surgeon for Neurosurgery and Assistant Visiting Neurologist, Boston City Hospital. His subject is: "Recent Advances in Neurological Surgery." Page 1308. Address: Boston City Hospital, Boston.

MISCELLANY

A TESTIMONIAL TO DR. EDWARD O. OTIS

The headquarters of the Boston Tuberculosis Association was the scene on Monday, June 8, of a Testimonial Meeting of tuberculosis workers to honor Dr. Edward O. Otis, Honorary President of the Massachusetts Tuberculosis League.

Dr. Otis, who was recently honored by the New Hampshire Medical Society for his fifty years as a practising physician, was given a tribute by tuberculosis workers from all parts of Massachusetts.

Dr. Frederick T. Lord, President of the State League, presided.

Dr. John B. Hawes, 2nd, President of the Boston Tuberculosis Association, paid a touching tribute to Dr. Otis for his many years of service not only as a physician but also as a member of the Boston Tuberculosis Association's directorate and as a leader in humanitarian enterprises.

Mrs. Mabel Greeley Smith, Executive Secretary of the Cambridge Tuberculosis Association, spoke for the Executive Secretaries of the twenty-eight Affiliated Organizations of the League. Mrs. Smith reviewed the service of Dr. Otis to the volunteer tuberculosis movement throughout the State since 1908, and stressed the fact that the best way in which our debt to Dr. Otis can be repaid will be by living up to the high standards which he has set.

Dr. Charles F. Wilinsky, Deputy Commissioner of Public Health of the City of Boston, brought the greetings and tribute of the Health Department of the City.

Dr. George H. Bigelow, State Commissioner of Public Health, expressed the appreciation of the Commonwealth for the great service rendered by Dr. Otis to public health authorities over his long career in the tuberculosis field.

Mr. John Ritchie, President of the Malden Anti-Tuberculosis Society, in behalf of Dr. Otis' co-workers presented a testimonial signed by physicians, nurses, and other health workers from all parts of the Commonwealth. He also presented Dr. Otis with a purse of gold.

A BROADCASTING MESSAGE PREPARED AND SPONSORED BY THE COMMITTEE ON PUBLIC EDUCATION OF THE MASSACHUSETTS MEDICAL SOCIETY FOR THE DEPARTMENT OF PUBLIC HEALTH

THE TREATMENT OF MENINGITIS*

Meningitis is the name given to an infection of the fluid and tissues which surround the brain and spinal cord. It may be caused by a number of different germs, but the form of the disease which we are to consider today is due to infection with the meningococcus. This type of meningitis is sometimes called epidemic meningitis or "spotted fever" because there is often a red spotted rash on the body. The disease is slightly contagious, so that patients who are ill with this disease should be isolated from all others, except those who take care of them.

Our earliest knowledge of this disease dates back to 1465 when it was described by a French physician. However, the first authoritative account was written in 1805 following an epidemic in Geneva. Meningococcus meningitis appeared in epidemic form in the United States in March 1806 at Medfield, Massachusetts. From Massachusetts, it spread throughout the eastern part of the United States and also to Canada. It was during this epidemic that the term "spotted fever" was first employed. Since 1806 the disease has appeared in epidemic and sporadic forms throughout this country. It was common among the soldiers at camp during the World War. The most recent epidemic occurred on the Pacific Coast in 1928, and in Detroit in 1930. There are always a few cases in this community. Epidemics do not show a continuous extension. That is, they do not spread from one place to immediate nearby towns as districts widely separated are frequently affected at the same time. In this particular it is not unlike infantile paralysis and differs from the more common contagious diseases.

The majority of the cases of epidemic meningitis occur in infants and children and young adolescents. It is considerably more common in members of the male sex. In the South, the disease is much more common among the negroes than among the whites. Epidemics of the disease usually occur in the winter and spring months although scattered isolated cases may occur at any time of the year.

The chief agency by which this disease is spread is supposed to be the "carrier". By this term is meant a person who is not himself suffering from the disease, but who harbors the germs in his respiratory passages and who is able to transmit the disease to some other person. It is rarely possible to obtain a history of direct exposure from one person to another and it is rare for more than one member of a family to contract the disease unless several members are afflicted at the same time. For this reason it seems probable that the disease is spread by some person who is not conscious that he is a source of danger and is not himself ill.

*WBZA radio broadcast April 22, 1931 at 5:20 P. M.

The symptoms of meningitis may be only those of an acute infection and are quite variable in different individuals. The symptoms differ a good deal, depending upon the age of the person who is afflicted. In infants the most common symptoms are in the digestive tract such as vomiting and diarrhea. In older children and in adults, headache the drowsiness are present. Convulsions are generally believed to be a sign of meningitis. As a matter of fact they do not occur as a rule until late in the course of the disease and may not occur at all. Sometimes children present very little which would indicate a disease of the nervous system. The diagnosis is often difficult to make especially until the well-marked physical signs of the disease are evident. From the point of view of treatment, it is important to make the diagnosis as early as possible because the benefit to be derived from the use of serum and other therapeutic measures is directly proportionate to the promptness of their application. The earlier effective treatment is indicated, the more likelihood there is that complete recovery will take place. Unless treatment is instituted early, complete recovery may not occur and although life may be preserved not infrequently there is some handicap left, such as blindness, deafness, paralysis, or mental impairment. Each day that the disease is untreated after the onset not only decreases the chance of recovery but increases the possibility of complications.

The diagnosis of meningitis is made by the withdrawal of fluid from the spinal canal. This procedure is called lumbar puncture. Examination of the fluid will indicate whether an infection is present, and also the nature of the infection if any exists. It is unaccompanied by any serious effect upon the patient, although occasionally quite severe reactions occur.

The treatment of epidemic meningitis was not established on a definite basis until 1905. In that year Dr. Simon Flexner of the Rockefeller Institute in New York City found that if the germ causing this disease were injected into a horse and if at a later date blood was withdrawn from that animal and the serum injected into the spinal canal of a person ill with meningitis the organisms in the human being would be destroyed. This serum was called "anti-meningococcus serum". Since 1905 it has been employed in the treatment of meningitis. The injections are given every eight, twelve or twenty-four hours depending upon the severity of the case, and continued once or twice a day until evidence of the active infection has disappeared from the spinal fluid. Formerly the serum was injected into the blood also, but this method of treatment is not now generally employed. In infants and young children serum is injected at the outset of the disease directly into the ventricles of the brain. These are the cavities in which the spinal fluid is formed and where very active infection takes place.

Since the discovery of this serum the mortality rate and the complications of the disease have been remarkably reduced. Formerly the mortality rate in infants during epidemics ranged between 90 and 100% whereas now it is about 25 to 30%. The effectiveness of the serum is greatly increased by its use early in the disease and also by the vigor with which the treatment is pushed, that is, by the frequency of the injection, the injection into the ventricles of the brain as well as the spinal canal. Unfortunately, there are some individuals ill with the disease in which the serum does not seem to be of great value. Some of these patients die within the first 24 hours of the disease before treatment can be instituted, and in whom the disease is present in an especially virulent form. In others the type of germ which is causing the disease is of a slightly different strain, although closely related to the ones used in injecting horses from which the serum is obtained. It is important under these conditions to try serum obtained from various sources where the germs are slightly different and the serum, therefore, of corresponding difference.

Of course, in addition to the specific treatment of this disease with serum the infection must be treated on general lines such as are applicable to all infectious diseases.

The common unfavorable complications following this disease are a blocking of the free circulation of spinal fluid between the various portions of the brain and the tissues surrounding it which may result in the accumulation of an excessive amount of fluid within the brain and as a result a marked enlargement of the size of the head provided the bones are soft enough so that expansion can take place. If the skull is already rigid, as it is after the first two or three years of life, than the excess of fluid presses upon the brain itself causing a gradual increase in mental deterioration. This decrease in brain tissue may also take place even though the head is enlarging in size. This is a situation which may stop spontaneously before serious damage has been done to the brain and the child develop normally after that, but always retain a large head. If it does not stop spontaneously operative procedure may be undertaken, but thus far the results have not been satisfactory. Children, following meningitis, may also become blind or deaf, and in some instances may have other serious permanent handicaps. A considerable number of children and adults recover without any permanent unfavorable effects.

This is a disease which must be considered serious and for which we have a form of treatment which is effective in a considerable proportion of individuals, and which should be applied early in the disease.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR MAY, 1931

During the month of May 9,753 cases of communicable disease were reported to the Department as compared with 14,513 for the corresponding month of last year. The decrease was due largely to the lessened prevalence of measles in the Metropolitan Area.

Diphtheria, with only 152 cases reported, reached the lowest level ever recorded for the month of May.

Pulmonary tuberculosis likewise reached a new low level for the month.

Epidemic cerebrospinal meningitis, with but 8 cases, as contrasted with 33 for May last year, was less prevalent than at any time since 1924.

The reported incidences of anterior poliomyelitis, typhoid fever, whooping cough, lobar pneumonia and other forms of tuberculosis were likewise low.

The reporting of measles, German measles, mumps and influenza was within normal limits for May.

Scarlet fever, reported 1,542 times, reached next to the highest level ever reported. The increase is apparently due to more adequate reporting as well as a high prevalence of mild cases.

The reported incidence of chicken pox was the highest so far on record.

The reported incidence of gonorrhea and syphilis was consistent with the adequacy of reporting.

RARE DISEASES

Anterior Poliomyelitis was reported from Boston, 1; Reading, 1; Worcester, 1; total, 3.

Anthrax was reported from Haverhill, 1.

Dysentery was reported from Somerville, 2.

Epidemic Cerebrospinal Meningitis was reported from Boston, 3; Chicopee, 1; Lowell, 1; New Bedford, 1; Springfield, 1; Watertown, 1; total, 8.

Malaria was reported from Boston, 1.

Pellagra was reported from Boston, 1; Holyoke, 1; total, 2.

Septic Sore Throat was reported from Beverly, 2; Boston, 6; Everett, 1; Gardner, 3; Northampton, 2; Somerville, 1; total, 15.

Tetanus was reported from Boston, 1.

Trachoma was reported from Boston, 1; Stow, 1; Watertown, 1; total, 3.

Trichinosis was reported from Chicopee, 2; Framingham, 3; total, 5.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

	Cases in Entire Pop.				Case Rates per 100,000 Pop.		
	May 1931	May 1930	Proso. Index*	Epi. Index†	May 1931	May 1930	Expected Rates‡
All Causes	9753	14513	—	—	228.1	341.1	—
Ant. Polio.	3	5	7	.4	.1	.1	.2
Diphtheria	152	236	318	.5	3.6	5.5	7.4
Ep. C. S. Men.	8	33	4	2.0	.2	.8	.1
Measles	2299	6448	5295	.4	53.8	151.5	123.8
Pneu. Lobar	335	416	370	.9	7.8	9.8	8.7
Sc. Fever	1542	947	1014	1.5	36.1	22.2	23.7
Tbc. Pul.	399	472	440	.9	9.3	11.1	10.3
Ty. Fever	21	10	18	1.2	.5	.2	.4
Wh. Cough	626	1171	1303	.5	14.6	27.5	30.5
Chicken Pox	1138	848	—	—	26.6	19.9	—
Ger. Measles	602	1374	—	—	14.1	32.3	—
Gonorrhea	607	537	—	—	14.2	12.6	—
Influenza	23	12	—	—	.5	.3	—
Mumps	644	667	—	—	15.1	15.7	—
Syphilis	361	375	—	—	8.4	8.8	—
Tbc. O. Forms	55	38	—	—	1.3	.9	—

*This index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above: 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus, 2.0 would indicate twice the expected number of cases, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927 issue of the *Boston Medical and Surgical Journal*.

‡Calculated from the Prosodemic Index.

CORRESPONDENCE

THE INTERNATIONAL CONGRESS OF INDUSTRIAL ACCIDENTS AND DISEASES

The Commonwealth of Massachusetts
Department of Industrial Accidents
State House, Boston

June 8, 1931.

Editor, *The New England Journal of Medicine:*

I am sending you a partial program of the Sixth International Congress of Industrial Accidents and Diseases to be held at Geneva, August 3 to 8, 1931, to which I have been named as a delegate by President Hoover.

The other delegates are Dr. Francis D. Patterson of Philadelphia, Dr. Fred H. Albee of New York, Dr. Emery R. Hayhurst of Columbus, Ohio, and Dr. Emma S. Ward of the United States Public Health Service, West Forest Park, Baltimore.

The National Committee for the United States of America desires to extend an invitation to all physicians interested in this type of work to attend this Congress. I would be very glad to give any

further information as to time or the methods of travel necessary to get there as would aid those desiring to go.

Yours very truly,

FRANCIS D. DONOGHUE, M.D.,
Medical Adviser.

VI INTERNATIONAL CONGRESS OF ACCIDENTS AND INDUSTRIAL MEDICINE

Geneva, Switzerland, 3. August 1931

The principal questions for discussion are as follows:

SECTION A

I. Sequelae and Final Results of Traumatic Wounds of the Spine

Reporters:

Prof. Dr. Magnus, Bochum (Germany)

Prof. Dr. Michel, Professor of the Surgical Clinic, Nancy

Prof. K. Ackermann, 12 Riddargatan, Stockholm

Prof. Dr. Fauquez, Paris, 7 rue de Madrid.

Coreporter: Prof. Dr. Crouzon, Paris, 170 bis, Avenue d'Iéna.

II. Traumatism of Blood-Vessels (Arteritis and Thrombophlebitis)

Reporters:

Prof. Dr. Imbert, Marseille, 370 rue du Paradis

Prof. Dr. Diez, Rome 49 Via Velletri

Dr. Danis, Bruxelles, rue de la Source.

III. Cutaneous Affections in Relation to Occupation (Accidents and Illnesses)

Reporters:

Prof. Dr. Prosser White, 6 Clinton Street, Whigan (Lanc.), England

Prof. Dr. Koelsch, München, Briennerstrasse 50/11, Bavaria

Prof. Dr. Oppenheim, Wien, Wilhelminenspital

IV. The Influence of Previous Health on the Results of Industrial Accidents

Reporters:

Dr. Pometta, Lucerne (Switzerland), Suval

Prof. Dr. Tovo, Turin, Corso Stupinigi 5

Prof. Dr. Liniger, Frankfort o/Main, Giolittistrasse (Germany)

SECTION B

I. Illness Affecting Men Working Upon Cement and Artificial Stones

Reporters:

Prof. Dr. K. W. Jötten, Director of the Hygiene Institut of Westphalia, Münster, Germany

Dr. Glibert and his collaborators, President of the technic commission of caution funds for victims of professional illnesses. Cortenberg, Belgien.

Dr. L. R. Thompson, Chief of the division for industrial hygiene Public Health Service, Washington, U. S. A.

Prof. Dr. Agasse-Lafont, Department-Chief of professional pathological studies at the institute for industrial hygiene, Faculty of medicine, Paris, 7 rue d'Artois

Dr. Van Bemmel, Med. Insp. for Work, Breda (Holland)

II. Reaction of the Organism Towards the Toxic Substances Used in Industry

Reporters:

Prof. Dr. Teleky, Medical regional adviser, Düsseldorf (Germany) Julicherstrasse 70

Prof. Dr. L. Devoto, Director of the Clinic for professional illnesses, Milan, 8 S. Barnaba (Italy)

Prof. Dr. G. Mauro, Clinic for professional illnesses, Milan, 8 S. Barnaba

Dr. Gelmann, Director for the Obuch Institute for professional illnesses, Moscow, Voronsovo Polé. (U. R. S. S.)

Dr. Loewy, Clinic for professional illnesses, Prague (Tschecoslovaquie) Vodikova Ulice, Palais u Novaku

III. Fatigue

Reporters:

Dr. Atzler, Director of the Kaiser-Wilhelm Institute for Work's Physiologie, Dortmund (Germany)—

Muscular Work

Prof. Henderson and Dr. D. B. Dill, Harvard University, Morgan Hall, Soldiers Field, Boston, Mass. (U. S. A.)

Biochemistry

Dr. H. M. Vernon, M.A., M.D., Investigator, Industrial Health Research Board, London (England)

Occupational Environment

Dr. G. Teruoka, Director of Work Science of Kurashiki (Japan)

The Human Factor

An exhibition of radiographies, photographies and models will be held. All details about this exhibition can be obtained from Dr. Jentzer, Geneva, rue de l'Université 8.

AN ALLEGED ERROR

Dear Editor:

May I correct an error in Dr. William Dameshek's "Some Arguments Against State Medicine" in your issue of June 4, 1931, concerning the pay schedule of the doctors under the system of free medicine proposed in House Bill No. 288, killed twice by legislative committees but endowed with additional lives. Instead of being lower than that of the Navy's, it is higher, for it provides pay and extra allowances for such as now serve as internes without any financial compensation. The maximum, exclusive of certain allowances, is not $4,100 which he misstates, but $10,000.

May I also ask without impertinence to this subject, How much has State Medicine curbed the initiative of either the Superintendent of the Worcester State Hospital or the Commissioner of Public Health of Massachusetts?

Yours truly,

G. W. HAIGH.

June 9, 1931.

A CORRECTION WITH RESPECT TO THE TERM RECONSTRUCTION CLINIC OF BOSTON

Reconstruction Clinic and Hospital
366 Commonwealth Avenue
Boston, Mass.

June 12, 1931.

Editor, *New England Journal of Medicine:*

In the *Lawrence Tribune* for June 9, 1931, appears an article covering the Lawrence Reconstruction Clinic, in which reference is made to the Reconstruction Clinic of Boston.

To prevent possible misapprehension we wish to say that the Reconstruction Clinic of Boston is a wholly charitable institution which has no connection with the Reconstruction Clinic of Lawrence, nor with any other institution.

Very truly yours,

E. G. MITCHELL, M.D., *Executive Secretary,*

P. S.: The old charter of the Reconstruction Clinic was dissolved on December 27, 1930, and since that time The Clinic is being conducted by a Board as a Charitable Clinic.

THE OPENING OF THE NEW MEDICAL AND SURGICAL BUILDING AT THE RUTLAND STATE SANATORIUM

The Commonwealth of Massachusetts
Department of Public Health
State House, Boston

June 15, 1931.

Editor, *New England Journal of Medicine:*

The new surgical building at the Rutland State Sanatorium will be opened on Friday, June 26. Exercises will be held from eleven to one, at which His Excellency, Governor Ely, will speak.

As this indicates a definite advance in our resources for the adequate treatment of pulmonary tuberculosis, we should like through your columns to invite any physician in the State interested to attend.

Yours truly,

GEORGE H. BIGELOW, M.D.,
Commissioner of Public Health.

NEWS ITEM

DR. B. M. FRIED OF BOSTON AND BROOKLINE ADDRESSED THE NATIONAL TUBERCULOSIS ASSOCIATION—The 27th annual meeting of the National Tuberculosis Association, which was held at Syracuse, May 11 to 14, was addressed by Dr. Boris M. Fried of Boston and Brookline on the histogenesis of the tubercle of the lung.

NOTICES

REMOVAL

Dr. Edwin P. Seaver, Jr., wishes to announce the removal of his office on June 1, 1931, to 116 Bedford Street, New Bedford, Mass.

ANNOUNCEMENT BY THE U. S. PUBLIC HEALTH SERVICE OF THE THIRD PAN AMERICAN MEDICAL CONGRESS

Treasury Department
Bureau of the Public Health Service
Washington

June 5, 1931.

The Third Pan American Medical Congress will be held in the City of Mexico, July 26 to 31, 1931. This Congress is being held under the auspices of the Department of Public Health of the Mexican Government. The U. S. State Department has decided that our Government will participate in this Third Pan American Medical Congress and has designated several American physicians as delegates on the part of the United States to this Congress.

TALIAFERRO CLARK, *Acting Surgeon General.*

For detailed information apply to Dr. José Torres Torija, Treasurer of the Congress Committee of the III Pan American Medical Congress, Departamento de Salubridad, México, D. F.

REPORTS AND NOTICES OF MEETINGS

WACHUSETT MEDICAL IMPROVEMENT SOCIETY

The last regular meeting of the Wachusett Medical Improvement Society was held on June 3, 1931, at the Holden District Hospital.

Dr. Arthur Kimberly spoke on "Four Months' Pediatric Service at Memorial Hospital." It was a very interesting paper and much discussion followed.

WILLIAM T. KNOWLTON, *Secretary.*

MIDDLESEX SOUTH DISTRICT MEDICAL GOLF ASSOCIATION

SPRING TOURNAMENT

The spring tournament will be held at the Commonwealth Country Club, 91 Algonquin Road, Chestnut Hill, on Wednesday, June 24.

Play is to begin at 1 P. M., with dinner at 6 P. M.

Make up your own foursome if possible, but, if unable, come and a match will be arranged for you at the Club House.

These tournaments have been increasingly popular and we want to make this one more of a success than ever.

Prizes: First and second gross, first and second net; special prize for the longest drive from a tee to be designated, also for highest score and the most strokes on one hole.

Greens fees, $3.00; dinner, $2.00; expense fee, $1.00.

W. T. O'HALLORAN, *President.*
S. M. BIDDLE, *Secretary.*

GREATER BOSTON BICKUR CHOLIM HOSPITAL

ANNUAL BANQUET OF STAFF

The Second Annual Banquet Meeting of the Greater Boston Bickur Cholim Hospital staff was held at the Beacon House on May 19, 1931.

After a splendid repast the business of the meeting proceeded under the able toastmastership of Dr. A. Myerson. Dr. S. Richmond, as chairman of the staff, brought out in his annual report the interesting fact that out of a total of 137 patients admitted to the Hospital, 37 were discharged improved and many of these returned to their previous occupations. This is the more remarkable, because most of the applicants to this hospital are chronically ill and, as a rule, hopeless invalids.

Among other speakers was Dr. Reginald Fitz, who spoke on the necessity and usefulness of hospitals for chronic diseases in general, and the Greater Boston Bickur Cholim Hospital in particular.

SOCIETY MEETINGS

CONGRESSES AND CONFERENCES

July 6-11—Medical Clinic, Paris. See page 520, issue of March 5.

July 26-31—Third Congress of the Pan American Medical Association. See page 632, issue of March 19.

July 27—The Post Graduate Course of Ear, Nose and Throat Surgery at the University of Bordeaux, France See page 951, issue of April 30.

July 27-31—Third International Congress of Radiology, Paris. See page 789, issue of April 9.

August 3-8—The International Congress of Industrial Accidents and Diseases. See page 1330.

Aug. 31 - Sept. 4—Neurologists will meet in Berne, Switzerland. See page 896, issue of April 23.

September 14-17—The American Public Health Association. See page 632, issue of March 19.

October 12-16—An Announcement of the Clinical Congress of the American College of Surgeons. See page 1175, issue of May 28.

October 19-22—The Interstate Post Graduate Medical Association of North America. See page 1125, issue of May 21.

October 19-30—Graduate Fortnight of the New York Academy of Medicine. See page 1230, issue of June 4.

April 4-8, 1932—The American College of Physicians. See notice on page 1232, issue of June 4.

DISTRICT MEDICAL SOCIETIES

Bristol North District Medical Society

September 17—Details to be announced.

Middlesex South District Medical Society

June 24—Golf Association Spring Tournament. See page 1332.

Plymouth District Medical Society

July 17—Midsummer meeting. See page 1011, issue of May 7.

BOOK REVIEWS

Nutrition and Diet in Health and Disease. By JAMES S. MCLESTER, M.D. 2nd Edition, revised and reset. W. B. Saunders Company, Philadelphia and London, 1931. Pp. 891. Price $8.50.

A revised edition of Dr. McLester's book appearing a few years after the original publication is not only indicative of the increasing interest in nutrition, but also significant of this exposition of the subject. The book is divided into three parts—nutrition in health, nutrition in disease, and a part containing many useful tables and charts. In the first part chapters deal with metabolism, digestion, and absorption, essential facts in nutrition, milk, and the protein and other foods. One chapter on the feeding of infants in health has been written by Dr. McKim Marriott. In the second part chapters describe some of the determining factors, but especially the treatment of deficiency diseases, metabolic diseases, and diseases of the various systems. One chapter on the feeding of surgical patients has been written by Dr. Barney Brooks. In this edition sections dealing with the toxemias of pregnancy, food poisoning, the irritable colon, and protozoan infections have been added. Sections describing the enzymes, the protein requirements, epilepsy, and the treatment of diseases of the blood have been rewritten. Sections discussing the vitamins, mineral metabolism, and deficiency diseases have been brought up-to-date; and those dealing with disorders of digestion, obesity, diabetes, and gout have been materially changed.

While little is yet known about the acid and basic value of foods, it would seem as if some consideration should be given to them under nutritional factors in health, rather than only a brief allusion to them in the treatment of nephritis. The dietary control of diarrhea and constipation has not been given the prominence it deserves. The sections on the nutritive treatment of obesity, diabetes, and anemia are especially comprehensive and up-to-date. On the whole, the book has an orderly arrangement, is well written, and contains a great deal of useful information for medical students and practitioners. Furthermore, the references, listed at the end of each chapter, and the index are very complete.

The Diet Book—for Doctor, Patient and Housewife—With Specimen Menus for One Week and Recipes. By MARGUERITE REQUA REA. With a Foreword by SIR JAMES PURVES-STEWART, K.C.M.G., Physician to Westminster Hospital. Oxford University Press. London: Humphrey Milford. 1931. 197 pp. Price $2.75.

Practical Dietetics for Adults and Children in Health and Disease. By SANFORD BLUM, A.B., M.S., M.D., Head of Department of Pediatrics, and Director of the Research Laboratory, San Francisco Polyclinic and Post Graduate School. Fourth Revised and Enlarged Edition. Philadelphia. F. A. Davis Company, Publishers. 1931. 380 pp. Price $4.

Regulation of diet is, obviously, an important part of medical treatment, and, as such, is dealt with in all textbooks of medicine and therapeutics. Nevertheless a place exists for special books on diet, for two particular reasons. First, medical teaching seldom goes so far as giving directions for the cooking of food. Second, there is a need for specific diet lists embodying the general therapeutic principles. These two books are intended to meet these needs.

"The Diet Book" is a modest volume in two parts. The first part includes detailed dietaries for twelve conditions, from Acute Colitis to Rheumatism. In general these may be approved, although they are not wholly in accord with the prevailing usage in this country. More may be said in praise of the

second part, composed of recipes. No doubt a nurse coöperating with a cook (if such coöperation is possible) could often use these to the patient's advantage.

"Practical Dietetics" is composed of a large number of diet lists which the author has given to patients, for disorders listed alphabetically. The terminology employed, however, is sometimes confusing so that, while these diets seem generally harmless, it is not always easy to recognize them as applications of important basic principles. Thus the prescriptions for *Liver, Fatty* and for *Scrofulous Diathesis* are the same, except that potato is forbidden in the one and allowed in the other. In the recommendations for infant feeding, the formulae are almost exclusively simple mixtures of milk and water, milk sugar being added only exceptionally. The whole book seems to be an exposition of its author's personal procedure, which may well have met with clinical success although it can hardly be considered a clear exemplification of scientific dietetic therapeutics.

Nervous Indigestion. By WALTER C. ALVAREZ, M.D. Published by Paul B. Hoeber, Inc. Price $3.75.

Alvarez has presented the medical profession with a book which is distinctly stimulating, not only because of its contents, but also because of the fact that many of the things which are supposedly necessary for a book on gastro-enterology are purposely omitted. The book is an exceedingly reliable one and any medical man or even a surgeon who will read it with care would be well rewarded. It contains a great deal of medical common sense and presents points that are frequently overlooked by practitioners of medicine and surgery.

The style of writing is excellent and makes the subject matter of much more interest than the material presented in so many of the present volumes that are offered to the public. Throughout the book there is a breezy optimism that cannot help but convince and charm the reader.

Alvarez's insistence upon the importance of what one might term the neuromuscular physiology of the digestive tract is very timely and strikes at the fundamentals of most of the ills that bring patients to the gastro-enterologists or to the general practitioners. The great importance of functional disturbance in human beings is sadly overlooked even in these days of psychiatry and psychoanalysis. Alvarez has brought the fruits of his experience and numerous observations to a very interesting fruition in his book. One cannot commend it too heartily.

Quantitative Clinical Chemistry. Vol. 1. Interpretations. By JOHN P. PETERS and DONALD D. VAN SLYKE. Williams & Wilkins Company. 1931. Pp. 1264. Price $12.00.

This volume represents a very successful attempt to condense into a relatively small compass an enormous amount of chemical information of interest and value to physicians and research workers in medicine. The variety of subjects is large. The style is easy, the language clear. Acid-base equilibrium is covered most completely. The chapter on carbohydrate metabolism is excellent, though the reviewer regrets the lack of reference to certain well-known American micro-chemical methods already in wide use in this country. Inorganic salt metabolism is well covered, particularly calcium. Only passing mention is made of the recent advances of Warburg in the chemistry of malignant disease. Indeed, of the important diseases, cancer receives but little attention. The omission must not, however, be regarded as serious. The figures are numerous and clear and the bibliography complete and up-to-date. It is a pleasure to find a well-written, clearly printed, authoritative discussion of chemical pathology and physiology as applied to clinical medicine. The book should be in the hands of all research workers and physicians who want to keep abreast of a most important field.

A Manual of Tuberculosis for Nurses. By E. ASHWORTH UNDERWOOD. Publishers—William Wood & Company and E. & S. Livingstone. Price $2.50.

This small book is a volume of some 270 pages including a glossary giving definitions of the various technical terms which are used and a good index. There are in addition fourteen chapters and thirty illustrations. Each chapter ends with a clear and concise summary which adds greatly to its value.

Parts of this book are to be highly recommended, others not so much so. For instance, the first chapter entitled, "The Seed, The Soil and The Sowing"; the third, "Pulmonary Tuberculosis—Symptoms and Signs"; and the fourth, "The Course and Complications of Pulmonary Tuberculosis", are particularly valuable. The chapter on sanatorium treatment is short and rather too much so. Autoinoculation by gradually increasing exercise is given rather too much emphasis. The chapter on nursing duties is practical and clear. When it comes, however, to the treatment of symptoms far too much is given. There is no conceivable reason, for instance, why a nurse should know anything about creosote and other so-called antiseptics so far as tuberculosis is concerned. In fact, the less said of creosote, I.K. therapy, tuberculin, sanocrysin, the better. Likewise, details of artificial pneumothorax, thoracoplasty, phrenicotomy and the use of lipiodol are given. The book would be much better off without the mention of all this. In fact, there is an entire chapter devoted to tuberculin and the diagnosis of tuberculosis which might well be omitted.

If this book were made simpler, shorter, less technical and if the chapters having to do with things which concern physicians only were omitted, it would be much improved. There are points of value in some of the chapters, however, as indicated above.